



DEPARTMENT OF
ECOLOGY
State of Washington

Lower Duwamish Waterway Source Control Status Report July 2007 to March 2008

May 2008

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ECOLOGY
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Lower Duwamish Waterway Source Control Status Report July 2007 to March 2008

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Executive Summary

This report summarizes source control activities conducted by the Lower Duwamish Waterway (LDW) Source Control Work Group between July 2007 and March 2008. A previous status report (Ecology 2007g) provided an overview of the LDW site, the strategy for controlling sources of pollutants to the LDW, the process for developing Source Control Action Plans (SCAPs), the methods and process for implementing the SCAPs, issues associated with permitted discharges, and a summary of source control actions conducted between 2003 and June 2007. This current report updates this information, including:

- updated SCAP publication and implementation schedule;
- status of business inspections, other source tracing activities, site assessments and cleanups, phthalate studies, and other source control activities described in the previous status report;
- public involvement and outreach activities during the subject time period; and
- source control activities conducted between July 2007 and March 2008 at each of the identified source control areas, including the seven Early Action Areas (EAAs).

Source Control Action Plans

Since publication of the previous Source Control Status Report, SCAPs were published for EAA-4 (Boeing Plant 2/Jorgensen Forge), EAA-7 (Norfolk CSO/SD), and River Mile (RM) 1.3-1.6 West (Glacier Bay). In addition, work was initiated to summarize existing information/identify data gaps and prepare SCAPs for EAA-6 (Boeing Isaacson/Central KCIA), RM 0-0.1 East (Spokane St. to Ash Grove Cement), RM 0.9-1.0 East (Slip 1), RM 1.4-1.7 East (St. Gobain to Glacier Northwest), RM 1.7-2.0 East (Slip 2 to Slip 3), RM 2.0-2.3 East (Slip3 to Seattle Boiler Works), RM 2.3-2.8 East (Seattle Boiler Works to Slip 4), and RM 3.9-4.4 East (Slip 6).

A total of 246 source control action items have been identified based on the seven SCAPs published as of March 2008; 61 (25 percent) of these action items have been completed. Of the remaining 185 action items, 54 (29 percent of the remaining action items) are considered high priority (to be completed prior to sediment cleanup), 76 (41 percent) are medium priority (to be completed prior to or concurrent with sediment cleanup), and 55 (30 percent) are low priority (ongoing actions or actions to be completed as resources become available). Additional action items will be identified as SCAPs are completed for the remaining 16 source control areas. High priority action items which are not yet complete, as identified in or subsequent to SCAPs completed through March 2008, are listed in Table ES-1 at the end of this section.

Source Control Implementation

Business inspection and source tracing efforts continue. Under the Urban Waters Initiative, inspectors from the Washington Department of Ecology's (Ecology) Water Quality (WQ) and Hazardous Waste Treatment and Reduction (HWTR) programs, together with Seattle Public Utilities (SPU) inspectors and Toxics Cleanup Program (TCP) staff, have developed a master list of facilities, priorities for coordinating inspections and avoiding overlap, and a multimedia Source Control Checklist that will be used during source control inspections. SPU conducted 198

source control business inspections during 2007, and Ecology has conducted NPDES inspections at 16 facilities since July 2007.

Five sediment traps have been installed in the Norfolk combined sewer overflow/storm drain (CSO/SD) basin, in addition to the existing six locations in the Diagonal Avenue CSO/SD drainage basin and 10 locations in the Slip 4 drainage basin. These sediment traps will continue to be sampled to track changes in suspended particulate quality that may occur as a result of source control activities.

Site characterization or cleanup is in progress at eight facilities which are known or suspected threats to LDW sediments. Terminal 117, Rhone-Poulenc, and Boeing Plant 2, which includes part of Jorgensen Forge, are being managed by the U.S. Environmental Protection Agency (EPA). The upland portion of Jorgensen Forge and the PACCAR facility are being managed by Ecology with Agreed Orders under Model Toxics Control Act (MTCA). Ecology is developing Agreed Orders for the North Boeing Field/Georgetown Steam Plant and Duwamish Shipyard sites. Ecology contractors have sampled the soil/groundwater/sediment at Industrial Container Services (formerly Northwest Cooperage), and soil/groundwater and banks at South Park Marina.

Ecology has updated the assumptions and long-term projection for implementing source control. Cleanup of contaminated upland sites continues to be a limiting factor for river-wide source control. Since the last Source Control Status Report was published in July 2007, two Ecology staff positions have been added to manage contaminated upland sites. These new site managers have begun preliminary work toward negotiating Agreed Orders. For the purpose of developing the long-term projection, it was assumed that negotiations will begin by July 1, 2008. Additional upland sites that may require site assessment and cleanup continue to be identified as additional SCAPs are completed. The current projection assumes that up to 23 upland sites will be identified and that source control from all of these potentially contaminated upland sites could be completed by August 2016; this is a significant improvement over the scheduled completion date of 2021 presented in the July 2007 Status Report for 15 potential upland sites.

Source Control Activities

Major source control actions completed during July 2007 to March 2008 include:

- EAA-1 (Duwamish/Diagonal)
 - The city of Seattle cleaned 3,503 storm drain system structures in the Diagonal Avenue S. CSO/SD basin.
 - After SPU confirmed elevated PCB concentrations in catch basins on the Rainier Brewery property, the property operator and SPU jetted the storm drains and cleaned catch basins at and downstream of this property.
 - Port of Seattle published results of an independent groundwater investigation at Terminal 108; the report concluded that groundwater at Terminal 108 is not contributing contaminants to surface water or sediment in the LDW.
 - Port of Seattle completed a Source Control Strategy Work Plan for Terminal 108, and is currently developing an Environmental Conditions Report and Source Control Strategy Plans for the Eastern and Western parcels.

- EAA-2 (Trotsky Inlet)
 - Ecology collected sediment and whole water samples from the mouth of the Second Avenue S. outfall pipe (EAA-2); PCBs, dichloro-diphenyl-trichloroethane (DDT) compounds, bis(2-ethylhexyl)phthalate (BEHP), butylbenzyl phthalate, and dimethylphthalate exceeded screening levels in the sediment sample.
 - Ecology sampled groundwater and soil at the Industrial Container Services site, and sediment in the Trotsky inlet. Data indicate a number of exceedances of state standards in soil, groundwater, and sediments. PCB concentrations were as high as 76.5 mg/kg dry weight (DW) in soil, 4.5 ug/L in groundwater, and 2,930 mg/kg DW (24,417 mg/kg OC) in the inlet sediments. A data interpretation report is in preparation.
- EAA-3 (Slip 4)
 - Ecology completed a Site Hazard Assessment (SHA) for the Crowley property; a site hazard ranking of 2 was determined, where 1 represents the highest relative risk and 5 the lowest.
 - The city of Seattle completed design drawings and specifications for removal/replacement of the Georgetown flume; the project was approved by Ecology in March 2008.
 - Boeing collected samples from the seven sediment traps located on Boeing-leased property in October 2007; PCB concentrations were significantly lower in comparison to results from one year earlier.
 - Boeing replaced and/or re-routed three sections of the north storm drain line and conducted a soil sampling investigation concurrent with the drain line replacement. In addition, Boeing installed several new catch basins and manholes, slip-lined 500 linear feet of concrete storm drain in the north drain line, and conducted injection grout sealing of MH-172, CB-173, and CB-188.
 - During the soil investigation, PCBs were detected in 28 of the 36 soil samples collected, ranging from <1 to 2,680 mg/kg DW. PCBs were low (<2 mg/kg DW) in soil samples collected near Buildings 3-323 and 3-333.
 - Ecology is currently negotiating an Agreed Order with King County, Boeing, and the city of Seattle to conduct a Remedial Investigation/Feasibility Study (RI/FS) for this site. A signed order is expected by late May 2008. Ecology is planning to conduct the RI/FS with reimbursement from the potentially liable parties (PLPs).
- EAA-4 (Boeing Plant 2/Jorgensen Forge)
 - Ecology completed a SCAP for this source control area in December 2007.
 - Boeing is continuing site investigation and remediation under EPA jurisdiction, including continued shoreline groundwater monitoring, planning and implementation of interim measures, upland comprehensive planning and remedy selection, PCB-contaminated caulk assessment, and stormwater source control sampling, as described in Section 4.4.1.
 - Under an Agreed Order with Ecology, Jorgensen Forge prepared a draft Source Control Evaluation Report which evaluated existing data and identified potential

ongoing sources of contaminants to sediment; Ecology is currently reviewing the document.

- Jorgensen Forge has initiated a Level Three Response Action to identify the source of elevated concentrations of zinc in stormwater.
- EPA, Jorgensen Forge Corporation, and the former property owner are negotiating an Amended Administrative Order on Consent to prepare an Engineering Evaluation/Cost Analysis (EE/CA) for cleanup of affected sediments along a portion of the LDW adjacent to the property.
- EAA-5 (Terminal 117)
 - The Statement of Work for the Non-Time Critical Removal Action (NTCRA) at Terminal 117 was amended by EPA, the Port of Seattle, and the city of Seattle, to expand EAA-5 to include contamination discovered in the upland soils after execution of the 2005 Settlement Agreement, and to integrate cleanup of contamination in the street rights-of-way with the rest of the Terminal 117 EAA.
 - An EE/CA work plan was submitted to EPA in December 2007; preparation of the EE/CA will begin as soon as the work plan is finalized.
 - The Port of Seattle and city of Seattle completed a data gaps analysis for the Bank/Sediments, Upland, and Adjacent Streets subareas. No additional data gaps were identified, and the data were determined to be sufficient for preparation of the EE/CA.
 - At Basin Oil, drum removal was completed in March 2008.
 - Ecology prepared a Summary of Existing Information and Identification of Data Gaps report for South Park Marina to evaluate the potential for sediment recontamination associated with historic and current operations at the site, including the former A&B Barrel waste lagoon.
 - Ecology's contractor conducted a site reconnaissance investigation at South Park Marina, including sampling of soil, groundwater, and bank soils. Metals, PCBs, pesticides, SVOCs, TPH, and VOCs exceeded screening levels. A data report is in preparation.
- EAA-6 (Boeing Isaacson/Central KCIA)
 - Ecology is currently preparing a Data Gaps report for this source control area.
 - Groundwater samples collected from wells at the Boeing Thompson property contained arsenic concentrations of 9.8 to 720 ug/L, well above the MTCA Cleanup Level of 5 ug/L.
- EAA-7 (Norfolk CSO/SD)
 - Ecology prepared a Data Gaps report and SCAP for this source control area.
 - Boeing prepared an annual storm drain system sampling report, which documents post-removal monitoring conducted near the location of the 2003 sediment removal action at the Boeing Developmental Center (BDC) south storm drain line outfall. PCB concentrations ranged from 5.9 to 38 mg/kg.

- RM 3.9-4.4 East (Slip 6)
 - Ecology is negotiating an Agreed Order for upland cleanup actions at the Kenworth Truck/PACCAR site, which includes preparation of an RI/FS, a sediment report, and a cleanup action or interim action plan.
 - Insurance Auto Auctions (IAA), the current owner of the PACCAR site, installed and tested new stormwater system improvements to remove suspended solids and metals from facility stormwater discharges.
- RM 1.3-1.6 West (Glacier Bay)
 - Ecology prepared a Data Gaps report and SCAP for this source control area.
 - Duwamish Shipyard conducted cleanout and sampling of catch basins and lines.
 - Ecology is negotiating an Agreed Order with Duwamish Shipyard for investigation and cleanup of this site.

Table ES-1
High Priority Source Control Action Items To Be Completed

Source Control Area	Source Control Facility	Action Item	Type	Responsible Party	Status	Estimated Completion Date	Follow-On Actions
EAA-1 (Duwamish/Diagonal)	Diagonal Ave. S. CSO/SD	Conduct sediment trap sampling	New	SPU	Ongoing	2010	
EAA-2 (Trotzky Inlet)	Second Avenue S. Storm Drainage	Evaluate results of outfall pipe sediment and water samples	Follow-On	Ecology	In Progress	May 2008	
		Collect additional inline sediment samples to evaluate the levels of COCs with respect to sediment recontamination in this drainage.	SCAP	SPU	Planned	2007/2008	If COCs are present in the storm drain line, conduct source tracing
		If COCs are present in the storm drain line, conduct source tracing to identify sources of contaminants.	SCAP	SPU	Planned	2008	
	Industrial Container Services	Identify additional data gaps based on sampling results and determine means to fill them	SCAP	Ecology	Ongoing	May 2008	
		Conduct cleanup as needed to eliminate sources of contaminants to EAA-2	SCAP	Industrial Container/Trotzky	Planned	2008/2009	
		Investigate destination of roof drainage from northwest corner of property	SCAP	King County/ Ecology/ SPU/ Industrial Container Services	Planned	2008	
	Douglas Management Company	Conduct groundwater sampling along southern portion of property (adjacent to EAA-2 inlet) to evaluate potential for groundwater transport of contaminants from this site. Collect bank and seep samples	SCAP	Ecology	Planned	Spring 2008	
		Identify data gaps based on sampling results, and determine means to fill them.	SCAP	Ecology	Planned	2008	
EAA-3 (Slip 4)	North Boeing Field/KCIA/I-5	Reinstall sediment traps and continue monitoring as needed	SCAP	SPU, Boeing	Ongoing		
	Georgetown Flume	Close connections, remove contaminated sediment, and demolish and/or replace the flume	SCAP	SCL, SPU	In Progress	2008	
	GTSP	Conduct sitewide site characterization to assess need for additional remediation	SCAP	SCL	Planned	2008	To be done as part of Agreed Order for North KCIA/GTSP
	North Boeing Field	Characterize extent of PCBs in new joint sealant material	Follow-On	Boeing	In Progress	TBD	
		Continue source tracing in north drain line to identify and/or eliminate transport of PCBs to Slip 4	Follow-On	Boeing	In Progress	TBD	
	KCIA	Complete source tracing	SCAP	KCIA	In Progress	2007	
		Clean out catch basins and lines (if required)	SCAP	KCIA	In Progress	May 2007	
EAA-4 (Boeing Plant 2 /Jorgensen Forge)	Boeing Plant 2	Negotiate an Agreed Order for investigation and cleanup of the this site	New	Ecology, King County, city of Seattle, Boeing	In Progress	2008	
		Complete design and implementation of dredging, capping, and/or backfilling of the Duwamish Sediment Other Area (DSOA) Interim Measure	SCAP	EPA, Ecology, Boeing	In Progress	TBD	
		Remove contaminated bank fill material	SCAP	EPA, Boeing	Planned	TBD	
		Continue quarterly shoreline groundwater monitoring	SCAP	EPA, Boeing	In Progress	2008	
		Excavate PCB-contaminated soil in the substation area (southwest corner of Plant 2)	New	Boeing, Jorgensen	Planned	2008	
		Address removal of materials containing PCBs, including joint caulk material	SCAP	EPA, Boeing	In Progress	TBD	

Table ES-1
High Priority Source Control Action Items To Be Completed

Source Control Area	Source Control Facility	Action Item	Type	Responsible Party	Status	Estimated Completion Date	Follow-On Actions
		Conduct a joint hydrologic investigation with Jorgensen Forge to provide additional hydrogeologic data at the boundary of the two facilities	SCAP	Boeing, Jorgensen	Planned	TBD	
		Collect in-line sediment samples in the city of Seattle and city of Tukwila systems immediately prior to discharge to Plant 2's storm drain system	SCAP	EPA, Boeing	Planned	TBD	
		Conduct stormwater source control sampling of suspended solids and/or water along active storm drain lines	New	Boeing	In Progress	TBD	
		Implement catch basin solids sampling program	New	Boeing	In Progress	TBD	
	Jorgensen Forge	Conduct soil and groundwater sampling in the southeast portion of the site (historically thought to have been occupied by a wood treating facility) to determine if arsenic contamination is present and if so, whether the contamination leaching into the adjacent sediments	SCAP	Ecology, Jorgensen	Planned	TBD	
		Determine ownership of the 12- and 24-inch diameter stormwater lines located in an easement along the Jorgensen/Boeing property line, and determine the exact locations of the connections between these lines and the stormwater systems of Jorgensen, Boeing, city of Tukwila, and KCIA	SCAP	Ecology, Jorgensen Forge, Boeing, city of Tukwila, KCIA	In Progress	Summer 2008	
		Continue to address PCB and metal contamination in sediments of the LDW and Shoreline Bank Area through EPA CERCLA Order No. 10-2003-0001	SCAP	EPA, Jorgensen	Planned	TBD	
		Conduct a source control investigation through Agreed Order No. DE 4127 to determine if the facility is an ongoing source of contamination to LDW sediments	SCAP	Jorgensen, Ecology	In Progress	2008	
		Develop a hydrogeologic site model as part of the source control investigation to characterize the groundwater system on site, including tidal influence	SCAP	Jorgensen, Boeing	In Progress	TBD	
		Review current groundwater monitoring data to ensure that groundwater is not a pathway for contaminants to the LDW	SCAP	Ecology, Jorgensen	Planned	TBD	
		Conduct groundwater sampling in the center of the property (previously occupied by Isaacson Iron Works) to determine if contaminants are present above screening levels	SCAP	Ecology, Jorgensen	Planned	TBD	
		Negotiate an Amended Administrative Order on Consent (AOC) for preparation of an EE/CA for cleanup of affected sediments along a portion of the LDW adjacent to this property	New	Ecology, Jorgensen, Earle M. Jorgensen	In Progress	TBD	
	KCIA	Determine the connections between the KCIA stormwater system, the city of Tukwila system, and the 24-inch stormwater pipeline along the Jorgensen/Boeing property line	SCAP	Ecology, KCIA, Jorgensen, Boeing, city of Tukwila	In Progress	Summer 2008	
	East Marginal Way S.	Determine location and connection of large pipe crossing the northern edge of the Jorgensen property	SCAP	City of Tukwila, Jorgensen, KCIA	In Progress	Summer 2008	

Table ES-1
High Priority Source Control Action Items To Be Completed

Source Control Area	Source Control Facility	Action Item	Type	Responsible Party	Status	Estimated Completion Date	Follow-On Actions
		Determine connections between the KCIA stormwater system and the city of Tukwila system	SCAP	City of Tukwila, KCIA	In Progress	Summer 2008	
EAA-5 (Terminal 117)	Dallas Ave S	Continue monitoring of stormwater and catch basin sediments	Follow-On	City of Seattle	Ongoing	TBD	
	Terminal 117	Continue discussions between the Port, the city of Seattle, EPA, and Ecology regarding how to further address the potential presence of subsurface contamination in portions of the site formerly occupied by the Malarkey plant	SCAP	Port of Seattle, Ecology, city of Seattle, EPA	In Progress	Summer 2008	
		Revise the July 2005 EE/CA to incorporate all relevant upland and right-of-way data	New	Port of Seattle, city of Seattle, EPA	In Progress	2008	
		Install and sample additional groundwater monitoring wells	New	Port of Seattle	In Progress	2008	
		Complete needed assessments of portions of the site formerly occupied by the Malarkey plant	Follow-On	Port of Seattle	In Progress	2008	
EAA-7 (Norfolk CSO/SD)	Boeing Developmental Center (BDC)	Continue sediment monitoring in the vicinity of the south storm drain sediment removal activities	SCAP	Boeing	In Progress	TBD	
		Determine the source of PCBs in storm drain solids and conduct source control activities to remove PCBs from the system	SCAP	Boeing	Planned	TBD	
		Continue monitoring storm drain solids	SCAP	Boeing	In Progress	TBD	
RM 1.3-1.6 West (Glacier Bay)	Duwamish Shipyard	Negotiate an Agreed Order to address soil and groundwater contamination	SCAP	Ecology, Duwamish Shipyard	In Progress	2008	
		Prepare work plans for further site investigations as specified in the Agreed Order	SCAP	Duwamish Shipyard	Planned	2007	
		Conduct site investigations as specified in the Agreed Order Statement of Work	SCAP	Duwamish Shipyard	Planned	2007/2008	
		Review site investigation results and assess potential for sediment recontamination and need for remedial actions	SCAP	Ecology	Planned	2008/2009	
	Glacier Northwest	Direct current and/or previous property owners/operators to conduct site characterization investigations	SCAP	Ecology	In Progress	Summer 2008	
		Prepare work plans for site investigations as specified by Ecology	SCAP	Property owner/operator	Planned	2007	
		Upon approval of work plans by Ecology, conduct site investigations as specified	SCAP	Property owner/operator	Planned	2007/2008	
		Review site investigation results and assess potential for sediment recontamination and need for remedial actions	SCAP	Ecology	Planned	2008/2009	
All	NA	Complete development of LDW Source Control Database	NA	Ecology	In Progress	August 2008	

List of Acronyms

BDC	Boeing Developmental Center
BEHP	bis(2-ethylhexyl)phthalate
CB	catch basin
CSL	Cleanup Screening Level
CSO	combined sewer overflow
DDT	dichloro-diphenyl-trichloroethane
DNS	Determination of Nonsignificance
DRCC	Duwamish River Cleanup Coalition
DW	dry weight
EAA	Early Action Area
E&E	Ecology and Environment, Inc.
Ecology	Washington State Department of Ecology
EE/CA	Engineering Evaluation/Cost Analysis
EOF	Emergency Overflow
EPA	U.S. Environmental Protection Agency
FS	feasibility study
GTSP	Georgetown Steam Plant
GSA	General Services Administration
HWTR	Hazardous Waste Treatment and Reduction
IAA	Insurance Auto Auctions
IM	Interim Measures
KCIA	King County International Airport
KCIW	King County Industrial Waste
LDW	Lower Duwamish Waterway
LDWG	Lower Duwamish Waterway Group
MFC	Military Flight Center
MTCA	Model Toxics Control Act
NA	not available
NBF	North Boeing Field
NPDES	National Pollutant Discharge Elimination System
NTCRA	Non-Time Critical Removal Action
OC	organic carbon
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PHSKC	Public Health – Seattle and King County
PLP	potentially liable party
PSCAA	Puget Sound Clean Air Agency
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RM	river mile
ROD	Record of Decision
SAIC	Science Applications International Corporation

List of Acronyms (Continued)

SCAP	Source Control Action Plan
SCWG	Source Control Work Group
SD	storm drain
SEPA	State Environmental Policy Act
SHA	Site Hazard Assessment
SMS	Sediment Management Standards
SPU	Seattle Public Utilities
SQS	Sediment Quality Standard
SVOC	semivolatile organic compound
TBD	to be determined
TBT	Tributyltin
TCE	trichloroethylene
TCP	Toxics Cleanup Program
TMCL	Target Media Cleanup Level
TPH	total petroleum hydrocarbons
TOC	total organic carbon
TSCA	Toxic Substances Control Act
UST	underground storage tank
VOC	volatile organic compound
WQ	Water Quality

1.0 Introduction

This document summarizes the status of source control efforts in the Lower Duwamish Waterway (LDW) from June 2007 to March 2008. Washington State Department of Ecology (Ecology) published the first *Source Control Status Report* covering the period from 2003 to June 2007 in July 2007 (Ecology 2007g). The reader is referred to the July 2007 *Source Control Status Report* for more detailed information on:

- the history of the LDW Superfund site,
- agency roles and responsibilities,
- the LDW source control strategy and Source Control Work Group (SCWG),
- the Lower Duwamish Waterway Group (LDWG) and the Remedial Investigation/Feasibility Study (RI/FS), and
- site-wide source control programs.

Detailed background on individual source control areas is provided in the Data Gaps evaluation reports and Source Control Action Plans (SCAPs) for each area, as referenced in the text.

This section summarizes background information on the LDW site. Section 2 describes the process for developing SCAPs for known or potential sediment cleanup areas. Section 3 describes source control methods and the process for implementing SCAPs, and describes the status of source control activities being conducted for the entire LDW. Section 4 describes recent source control activities associated with the Early Action Areas (EAAs), while Section 5 describes Tier Two and Three source control areas. Section 6 presents a list of references.

1.1 Lower Duwamish Waterway Site

The LDW is the downstream portion of the Duwamish River, which extends from the southern tip of Harbor Island to just south of the Norfolk Combined Sewer Overflow (CSO) (Figure 1).

Chemicals of concern in the waterway include mercury and other metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), phthalates, and other organic compounds. These chemicals may pose a threat to people, fish, and wildlife.

The RI for the LDW site is being conducted in two phases. Results of Phase 1 were published in July 2003 (Windward 2003a). The Phase 1 RI used existing data to provide an understanding of the nature and extent of chemical distributions in LDW sediments, develop preliminary risk estimates, and identify candidate sites for early cleanup action within the LDW.

The *Technical Memorandum: Data Analysis and Candidate Site Identification*, issued in June 2003 (Windward 2003b), described seven candidate sites for early sediment cleanup action

(Windward 2003b). The seven sites, shown in Figure 1 and identified as Early Action Areas (EAAs), are listed below¹:

- Area 1: Duwamish/Diagonal CSO and storm drain (SD), east side of the waterway (River Mile [RM] 0.4 to 0.6)
- Area 2: RM 2.2, west side of the waterway, just south of the First Avenue S. bridge
- Area 3: Slip 4 (RM 2.8)
- Area 4: South of Slip 4, on the east side of the waterway, just offshore of Boeing Plant 2 and Jorgensen Forge properties (RM 2.9 to 3.7)
- Area 5: Terminal 117/Malarkey, west side of the waterway (approximately RM 3.6)
- Area 6: RM 3.8, east side of the waterway
- Area 7: Norfolk CSO, east side of the waterway (RM 4.9 to 5.5)

The Phase 2 sediment RI is designed to fill critical data gaps identified in Phase 1 and to complete human health and ecological risk assessments. The draft Phase 2 RI was published in December 2007. A feasibility study is being developed to address cleanup options in the LDW.

Further information about the LDW can be found at EPA's LDW website: <http://yosemite.epa.gov/r10/cleanup.nsf/sites/lduwamish> and the LDWG website: <http://www.ldwg.org>.

1.2 Lower Duwamish Waterway Source Control Strategy

The LDW Source Control Strategy (Ecology 2004a) involves developing and implementing a series of detailed, area-specific SCAPs. SCAPs document what is known about the area, potential sources of recontamination, and actions to address them. Each SCAP is unique to a specific sediment area because the scope of source control for each sediment area varies.

The source control strategy can be found at Ecology's website: http://www.ecy.wa.gov/programs/TCP/sites/lower_duwamish/source_control/sc.html

Further information about Lower Duwamish Waterway source control can be found at Ecology's Lower Duwamish Source Controls website:

http://www.ecy.wa.gov/programs/tcp/sites/lower_duwamish/lower_duwamish_hp.html

and at the King County/Seattle Public Utilities Joint Business Inspection website²:

<http://www.dnr.metrokc.gov/wlr/indwaste/duwamish.htm>

¹ In this report, the seven candidate sites are referred to by the following designations:

- Area 1 – EAA-1 (Duwamish/Diagonal)
- Area 2 – EAA-2 (Trotsky Inlet)
- Area 3 – EAA-3 (Slip 4)
- Area 4 – EAA-4 (Boeing Plant 2/Jorgensen Forge)
- Area 5 – EAA-5 (Terminal 117)
- Area 6 – EAA-6 (Boeing Isaacson/Central KCIA)
- Area 7 – EAA-7 (Norfolk CSO/SD)

² Note: King County website addresses will change by late 2008 to reflect the new domain name "kingcounty.gov."

1.3 Source Control Work Group

The primary public agencies responsible for source control for the LDW are Ecology, the city of Seattle, King County, Port of Seattle, the city of Tukwila, and the EPA. Together they are known as the LDW Source Control Work Group (SCWG).

The roles of the SCWG agencies are summarized in the July 2007 *Source Control Status Report* (Ecology 2007g). Any additional roles that may be developed will be described in the area-specific SCAPs. Roles for other public agencies, such as the Washington Department of Transportation, Puget Sound Clean Air Agency, or Public Health – Seattle and King County (PHSKC), may also be developed as information collection and source control proceeds.

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2.0 Developing Source Control Action Plans

2.1 Background

Ecology is developing SCAPs for all areas of the LDW site.

The Source Control Strategy established four prioritized tiers of work:

- Tier 1: Source control associated with Early Action sediment cleanups
- Tier 2: Source control associated with EAAs identified in Phase 1 and cleanup areas identified in Phase 2 of the sediment RI and EPA's Record of Decision (ROD)
- Tier 3: Source control necessary to prevent future sediment contamination from basins that may not drain directly to an identified sediment cleanup area
- Tier 4: Source control necessary to address any recontamination identified by post-cleanup monitoring of sediment

The first list of areas along the LDW that needed SCAPs included the seven EAAs identified in Section 1.1.

In 2007, Ecology, in consultation with EPA, identified eight potential Tier 2 source control areas. These were based on available sediment data, size of the upland basin draining to the source control area, and general knowledge about facilities operating in the basin. In February 2008, Ecology identified the areas of the LDW not covered by a SCAP or planned SCAP. Using the same criteria as in 2007, eight additional potential source control areas were added to the list.

The designation of a sediment area as a Tier 2 or Tier 3 depends on whether it needs cleanup. Since the RI is still being developed and the ROD will not be published until 2010, that decision will not be made for several more months. Until that time, there is no way to distinguish Tier 2 and Tier 3 areas with any certainty. This report addresses the Tier 1 areas in Section 4 and the remaining 16 source control areas in Section 5.

The 16 Tier 2 and Tier 3 areas and the seven EAAs (a total of 23 source control areas) are shown on Figure 2.

The SCAP for each of these sediment areas identifies potential contaminant sources and actions needed to control them, and evaluates whether ongoing sources are present that could recontaminate sediments after cleanup. In addition, the SCAPs describe source control actions that are planned or currently underway, and sampling and monitoring activities that will be conducted to identify additional sources.

Ecology works with consulting firms and SCWG members to write the SCAPs. Members of the SCWG provide information needed to define the storm drain and CSO basins as well as to identify and evaluate National Pollutant Discharge Elimination System (NPDES) permitted facilities and contaminated properties. This information is incorporated into the SCAPs.

2.2 SCAP Publication Schedule

Seven SCAPs have been published to date; six more are scheduled to be completed in 2008 and two more will be prepared during the first quarter of 2009. Publication of the remaining eight SCAPs depends on the availability of funding in the 2009-2011 biennium. The publication dates and schedule for the 23 SCAPs are as follows:

Site	Complete	Planned Start	Publication Date
EAA-1 (Duwamish/Diagonal)	●	February 2003	Issued December 2004
EAA-2 (Trotsky Inlet)	●	September 2006	Issued June 2007
EAA-3 (Slip 4)	●	May 2004	Issued July 2006
EAA-4 (Boeing Plant 2/Jorgensen Forge)	●	November 2006	Issued December 2007
EAA-5 (Terminal 117)	●	April 2004	Issued July 2005
EAA-6 (Boeing Isaacson/Central KCIA)		September 2007	July 2008
EAA-7 Norfolk CSO/SD	●	September 2006	Issued September 2007
RM 0-0.1 East (Spokane St. to Ash Grove Cement)		December 2007	November 2008
RM 0.9-1.0 East (Slip 1)		March 2008	January 2009
RM 1.0-1.4 East (KC Lease Parcels)		TBD	TBD
RM 1.4-1.7 East (St. Gobain to Glacier Northwest)		January 2008	December 2008
RM 1.7-2.0 East (Slip 2 to Slip 3)		April 2008	February 2009
RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)		September 2007	August 2008
RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)		January 2008	December 2008
RM 3.9-4.4 East (Slip 6)		September 2007	July 2008
RM 4.4-4.8 East (Boeing Developmental Center)		TBD	TBD
RM 0-1.0 West (Spokane St. to Kellogg Island)		TBD	TBD
RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)		TBD	TBD
RM 1.3-1.6 West (Glacier Bay)	●	February 2007	Issued December 2007
RM 1.6-2.1 West (Terminal 115)		TBD	TBD
RM 2.2-3.4 West (Water World)		TBD	TBD
RM 3.8-4.2 West (Sea King Industrial Park)		TBD	TBD
RM 4.2-4.8 West (Restoration Areas)		TBD	TBD

2.3 SCAP Implementation Schedule

The early stage of source control within a drainage basin, which includes conducting business/industrial inspections and tracing sources, is an intensive effort and continues until apparent sources are controlled. As businesses and land use change, the potential sources change as well. For large drainage basins such as the Duwamish/Diagonal CSO/SD, business inspections and source tracing are long-term, ongoing efforts. While it may be possible to reduce the level of effort needed over time within a given drainage basin, inspections and source tracing must continue regularly over the longer term in order to identify and control new potential sources as they arise.

For discrete upland sources, such as facilities that require cleanup under the Model Toxics Control Act (MTCA) or federal cleanup laws, cleanup and control are also long-term efforts. Contaminated soil may be a source of sediment recontamination through several pathways. Contaminants in soil adjacent to the LDW can enter the waterway through erosion. Some soil contaminants migrate into groundwater or change the chemistry of the soil and cause other contaminants to become more mobile. Some groundwater contaminants accumulate as they come into contact with sediments. These sites may directly affect sediments in the river and, while identifying them and bringing them under control is possible, it often takes several years. Due to the time it takes to clean up a contaminated site, Ecology believes the time and available resources needed to complete upland site cleanups will be a limiting factor for achieving river-wide source control. This will affect the schedule for the cleanup of sediment areas identified in the ROD.

A total of 246 source control action items have been identified based on the seven SCAPs published as of March 2008; 61 (25 percent) of these action items have been completed. Of the remaining 185 action items, 54 are considered high priority (to be completed prior to sediment cleanup), 76 are medium priority (to be completed prior to or concurrent with sediment cleanup), and 55 are low priority (ongoing actions, or actions to be completed as resources become available). Additional action items will be identified as SCAPs are completed for the remaining 16 source control areas.

Ecology developed long-term projections for implementing source control in the LDW during preparation of the July 2007 Source Control Status Report. These projections have been updated for the current Status Report. Cleanup of contaminated upland sites continues to be a limiting factor for river-wide source control. Since publication of the July 2007 Source Control Status Report, two Ecology staff positions have been added to manage contaminated upland sites. These new site managers have begun preliminary work toward negotiating Agreed Orders. For the purpose of developing the long-term project, it was assumed that negotiations will begin by July 1, 2008. Additional upland sites that may require site assessment and cleanup continue to be identified as additional SCAPs are completed. The current projection assumes up to 23 upland sites will be identified and that source control from all of these potentially contaminated upland sites could be completed by August 2016; this is a significant improvement over the scheduled completion date of 2021 presented in the July 2007 Status Report for 15 potential sites. The updated schedule for upland site assessment and cleanup activities is presented in Table 1; the entire schedule, including SCAP preparation and implementation, is shown in more detail in Appendix A.

Table 1. Projected Source Control Site Assessment and Cleanup Schedule

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Site Manager 1											
EAA-3 (Slip 4 - NCKIA/GTSP)							Start Apr 2007 Finish Apr 2012				
RM 1.3-1.6 W (Glacier Bay - Duwamish Shipyard)						Start May 2007 Finish Oct 2011					
RM 2.0-2.3 E (Slip 3 to SBW)								Start Oct 2008 Finish Dec 2013			
RM 2.3-2.8 E (SBW to Slip 4)									Start Apr 2009 Finish Jun 2014		
RM 4.4-4.8 E (BDC)										Start May 2010 Finish Jun 2015	
RM 1.6-2.1 W (Terminal 115)										Start Oct 2010 Finish Dec 2015	
Site Manager 2											
EAA-2 (Trotsky Inlet)								Start Mar 2008 Finish Aug 2013			
EAA-3 (Slip 4 - Crowley)						Start Jan 2008 Finish Dec 2011					
EAA-7 (Norfolk CSO/SD)									Start Jul 2009 Finish Aug 2014		
RM 0.9-1.0 E (Slip 1)										Start Jan 2010 Finish Feb 2015	
RM 2.2-3.4 W (Water World)											Start Jan 2011 Finish Feb 2016
RM 4.2-4.8 W (Restoration Areas)											Start Jul 2011 Finish Aug 2016
Site Manager 3											
RM 1.3-1.6 W (Glacier Bay - Other)								Start Jul 2008 Finish Apr 2013			
RM 0-0.1 E (Spokane St. to Ash Grove Cement)									Start Jan 2009 Finish Feb 2014		
RM 1.7-2.0 E (Slip 2 to Slip 3)										Start Jan 2010 Finish Feb 2015	
RM 0-1.0 W (Spokane St. to Kellogg Isl.)										Start Jul 2010 Finish Aug 2015	
RM 3.8-4.2 W (Sea King Industrial Park)											Start Jul 2011 Finish Aug 2016
Site Manager 4											
EAA-6 (Boeing Thompson/Isaacson)								Start Sep 2008 Finish Nov 2013			
RM 1.4-1.7 E (St. Gobain to Glacier NW)									Start Mar 2009 Finish Apr 2014		
RM 1.0-1.4 E (KC Lease Parcels)										Start May 2010 Finish Jun 2015	
RM 1.0-1.3 W (Kellogg Island to LaFarge)										Start Sep 2010 Finish Oct 2015	
Part-Time Site Managers											
EAA-4 (Boeing Plant 2/Jorgensen Forge)									Start Jul 2007 Finish Apr 2014		
RM 3.9-4.4 E (Slip 6)								Start Apr 2008 Finish Mar 2013			
Other Agencies											
EAA-1 (Duwamish/Diagonal): Port of Seattle/Independent Cleanup				Start Jan 2005 Finish Oct 2009							
EAA-5 (Terminal 117): EPA Oversight							Start Jul 2005 Finish Jan 2012				

3.0 Source Control Implementation

The three main types of source control activities are business inspections, source tracing, and upland site assessment and cleanup. These and other source control methods that are being implemented for the LDW as a whole were described in the July 2007 *Source Control Status Report* (Ecology 2007g). The following sections provide updates on the status of these activities. Action items associated with LDW-wide source control activities are summarized in Table 3, which is located at the end of this section. Source control activities related to specific source control areas are discussed in Sections 4 and 5.

3.1 Business Inspections

3.1.1 SPU and King County Business Inspection Program

Seattle Public Utilities (SPU) and the King County Industrial Waste (KCIW) Program inspect businesses in areas that discharge to the LDW through either the city-owned storm drain system or the combined sanitary/storm sewer system (King County and SPU 2005b).

SPU conducts most of the inspections and investigations in the LDW and coordinates with King County when necessary. King County continues with pretreatment inspections in the LDW through its Industrial Waste program.

The city of Seattle operates the local sanitary/combined sewers that collect wastewater and route it to the King County interceptor system and the municipal storm drains within the city of Seattle. King County operates the large interceptor pipes that convey municipal and industrial wastewater to the West Point treatment plan and the storm drain system in unincorporated King County. The sanitary/combined sewer and storm drains (including private storm drains) serve an area of about 19,800 and 8,940 acres, respectively.

During 2007, SPU continued inspecting local businesses in the Lower Duwamish service area to ensure that businesses are implementing appropriate pollution prevention practices and complying with local stormwater, industrial pretreatment, and hazardous waste regulations. SPU inspection efforts in 2007 focused on:

- re-inspecting high priority sites in the Diagonal/Duwamish basin,
- conducting initial inspections in the EAA-2 (Trotzky Inlet) source control area,
- conducting initial inspections in the RM 1.3-1.6 West (Glacier Bay) source control area, and
- inspecting five businesses in the Tukwila portion of EAA-7 (Norfolk CSO/SD), under a Memorandum of Agreement with Tukwila.

A total of 198 inspections were conducted during 2007; these are listed in Appendix B. The locations of 2007 inspections are shown in Figure 3. Inspections were conducted in the following subbasins:

Subbasin	No. of Facilities Inspected	No. of Screening Inspections	No. of Initial Inspections	No. of Follow-up Inspections
Diagonal CSO	4	1	3	2
Diagonal SD	83	1	79	51
Duwamish (NEC) SD	5	0	4	5
Glacier Bay	1	0	0	1
Norfolk SD	5	0	5	1
Slip 4	1	0	1	1
South Park	5	0	5	1
Terminal 117	1	1	0	0
Trotsky	24	3	21	12
Total	130	6	118	74

3.1.2 Ecology NPDES Inspections

Ecology issues NPDES permits for some businesses in the Lower Duwamish. While the permits limit and control the discharge of a number of pollutants, they do not necessarily control contaminants that pose a threat to the sediments, such as PCBs, phthalates, arsenic, mercury and PAHs. As of March 2008, Ecology has 113 NPDES permits on record:

- 103 Industrial Stormwater General Permits
- One Boatyard General Permit
- Four Sand & Gravel General Permits
- Four individual Industrial Permits

The permit types are described in more detail in the July 2007 *Source Control Status Report* (Ecology 2007g).

Ecology is continuing to inspect NPDES-permitted facilities to ensure compliance with permit conditions. In addition, Ecology's Water Quality Division has been visiting facilities as needed to determine whether a permit is required. Appendix C lists the most recent inspection dates for each of the NPDES-permitted facilities.

3.1.3 Urban Waters Initiative

The Urban Waters Initiative, a component of the Puget Sound Initiative, proposed a comprehensive, multi-program approach to:

- identify potential sources of contamination,
- ensure facilities that are required to be permitted are both permitted and in compliance with their permit terms,
- increase inspections of regulated facilities,

- assist in the development of appropriate source control measures,
- provide assistance on toxics reduction and pollution prevention, and
- build capacity at the local level to safely manage and reduce toxics at small businesses and households.

The initiative provides staff for Spokane River, Commencement Bay, and the LDW. For the Lower Duwamish, it requires that Ecology's Water Quality (WQ) and Hazardous Waste Treatment and Reduction (HWTR) programs each dedicate one existing full-time staff member to support this work.

Three work groups were formed to address inspection procedures and checklists, identify facilities already inspected, and determine the overall strategy for ongoing inspections and coordination in the Lower Duwamish basin.

The Urban Waters Initiative also includes \$180,000 to contract with a local government for a local source control specialist. This position is in the Hazardous Waste Program's budget and will likely be involved with inspections and technical assistance. This contract was awarded to SPU, the sole bidder. Work will include:

- working with smaller businesses to assure appropriate disposal of their waste, and
- response to issues covered by local ordinances and referrals to Ecology for investigation/action as appropriate.

The WQ and HWTR inspectors, along with SPU inspectors and Toxics Cleanup Program (TCP) staff, have developed a master list of facilities and priorities for coordinating inspections and avoiding overlap in the field (Ecology 2008a). The cross-regional/cross-program Ecology inspectors associated with the Urban Waters Initiative, from WQ, HWTR, and TCP, have been meeting informally to exchange information and updates on implementing the program.

King County coordinates with Ecology and SPU in conducting inspections and has provided a list to Ecology of KCIW permittees in the LDW. Coordination between King County, Ecology, and SPU will be particularly useful for facilities that are covered under a KCIW industrial discharge permit. King County has assigned a senior investigator to coordinate with the Urban Waters Initiative inspectors.

In December 2007, Ecology and SPU developed a multimedia Source Control Checklist based on the SPU-King County Joint Inspection Checklist. This will be used during source control inspections. The checklist will be field tested for several months, and improvements will be made as necessary. The HWTR program has purchased a modified version of the inspection tracking database used by SPU and King County. It is expected to be operational by April 2008 (Ecology 2008a).

3.2 Source Tracing

SPU and King County have been conducting source tracing and identification sampling activities since 2003 to support source control efforts (King County and SPU 2004, 2005a, 2005b). Source tracing sampling is designed to identify sources by strategically collecting samples at key

locations within the drainage/combined sewer service areas. Source identification sampling focuses on product testing to determine whether specific products contain chemicals that are a concern for waterway sediments.

Source tracing samples have been collected at the following locations to identify sources of chemicals of concern (Figure 4):

- Key manholes in the combined/sanitary sewer (King County)
- In-line sediment traps installed in the storm drain system (SPU)
- Onsite catch basins (SPU)
- Catch basins in the public right-of-way (SPU)
- In-line grab samples from storm drain main lines (SPU)

Storm drain sediment data are compared to the Washington State Sediment Management Standards (SMS) to provide a rough indication of overall quality. The SMS include the Sediment Quality Standards (SQS), which identify surface sediments that have no adverse effects on biological resources, and Cleanup Screening Levels (CSL), which are used as an upper regulatory threshold for making decisions about source control and cleanup. It should be emphasized that the SQS and CSL values do not apply to storm drain sediments. It is important to note that any comparison of this kind is most likely conservative given that sediments discharged from storm drains are highly dispersed in the receiving environment and mixed with the natural sedimentation taking place in the system. For organics, the measured dry weight concentrations were organic carbon (OC) normalized to allow comparison to the CSL/SQS.

3.2.1 Outfalls

Based on a comprehensive survey of outfall or outfall-like structures terminating in the LDW conducted in 2004 by SPU, along with information from the Phase 1 RI, and updated information from Ecology, EPA, the city of Seattle, the city of Tukwila, the Port of Seattle, King County, and Boeing, approximately 250 outfalls were identified within the LDW study area (Windward 2007a). The July 2007 *Source Control Status Report* listed 39 “unknown” outfalls. Of these, 17 have been resolved and are now identified as private outfalls, abandoned outfalls, or in some cases were determined not to be an outfall based on subsequent investigation. A total of 22 outfalls are currently identified as a “pipe of unresolved origin and/or use.” These 22 outfalls are shown on Figure 6. The source of discharge, if any, to these outfalls needs to be determined and is considered a source control action item.

3.2.2 Key Manhole Samples

King County periodically samples wastewater at key locations in the collection system to provide baseline data for comparisons when tracking down spills at the treatment plants. Twenty-four hour composite samples are collected over a 7-day period twice per year, once during the wet season and once during the dry season. Figure 4 shows the three key manhole sampling stations located within the combined sewer service area discharging to the LDW.

The *Lower Duwamish Water Source Control Status Report, 2003 to July 2007* summarized results of key manhole sampling in 2003 and 2004. No new key manhole data are available.

3.2.3 In-line Sediment Trap Samples

In-line sediment traps consist of a small bracket mounted inside the collection system pipe that holds a wide-mouth sample bottle. Traps are installed at selected locations in the drainage system to identify and isolate problem areas. Samples represent contributions from relatively large areas (>50 acres). They are installed for a period of 4 to 6 months to passively collect solids in the stormwater flow passing that location.

Traps have been installed in the following areas (Figure 4)³:

- Six sites in the Diagonal Avenue CSO/SD drainage basin
- Ten sites in the Slip 4 drainage basin
- Five locations in the Norfolk CSO/SD basin

Sediment trap sampling results are discussed in Section 5 for each source control area.

Ecology is working with SPU on an interagency agreement to install sediment traps in 25 locations. Ecology will fund SPU and its contractors to install the traps in drainage basins which do not currently have them, and analyze sediment samples collected from the traps.

3.2.4 Catch Basin Samples

Catch basin samples are grab samples of sediment that has accumulated in the catch basin sump. A catch basin is a storm drain structure that contains a sump to capture sediment and other debris before it can enter the collection system. Catch basins collect runoff from the nearby area (<0.5 acres). These samples are used to characterize contributions from specific sites and confirm whether they are sources of pollutants to the drainage system.

As of December 2007, 93 onsite and 76 right-of-way catch basin samples have been collected in the LDW study area (Figure 4). In addition, over 200 sediment and soil samples were collected from the public right-of-way and adjacent properties near EAA-5 (Terminal 117) as part of an emergency cleanup conducted by SPU in 2004–2005. Samples included catch basin sediment, street dust, and soil samples from the public right-of-way and adjacent yards.

Onsite catch basin samples have been collected at sites of interest identified during the business inspections or simply at sites where sufficient sediment was available for chemical analysis. Approximately 80 percent of the onsite samples were collected from sites where contamination problems were suspected either due to the nature of the onsite activities or because specific problems were observed during the inspection. Results for all samples will be published in a future source tracing progress report. Key findings to date were summarized in the July 2007 *Source Control Status Report* (Ecology 2007g).

³ Sediment trap sampling locations in the Norfolk CSO/SD basin were unavailable at the time this Status Report was prepared.

The Ecology-SPU interagency agreement described above includes funding to collect catch basin samples in areas where there has been little or no sampling to date. The current scope of work is for the collection of samples from 100 locations.

3.2.5 In-Line Sediment Samples

In-line sediment samples are grab samples collected from manholes located on the drainage mainline, and represent contributions from the entire drainage basin upstream of the sampling location. In-line sediment samples are usually collected prior to installing a sediment trap or before and after cleaning the drain to characterize the chemical quality of sediment in the storm drain system.

Between January 2002 and December 2007, SPU, Seattle City Light, and King County collected 92 in-line sediment samples from various locations in the Diagonal Avenue S. CSO/SD, Seventh Avenue S. and Second Avenue S. storm drains in South Park, King County Airport SD#3/PS44 Emergency Overflow (EOF), I-5 storm drain, Georgetown flume, and the Norfolk CSO/SD. Key findings were summarized in the July 2007 *Source Control Status Report* (Ecology 2007g). Validated date for sediment samples collected after June 2007 were unavailable at the time this Status Report was prepared.

3.3 Site Assessment and Cleanup

During SCAP development, Ecology and its contractors identify contaminated properties that may recontaminate a source control area. The consultants review available information about each property and prepare an assessment of whether the site poses a threat to the source control area. The detailed information on each property is reported in either a Property Review report (Duwamish/Diagonal, Terminal 117, Slip 4) or in a *Summary of Existing Information and Identification of Data Gaps* report (all other Source Control Areas). As of March 15, 2007, Ecology and its contractors had conducted assessments on 72 properties throughout the Lower Duwamish Basin (Table 2).

The investigation or cleanup of a contaminated property may be performed before a SCAP is written. This may occur when an owner wants to expedite cleanup or Ecology considers it necessary for source control. Site characterization or cleanup is in progress at several facilities which are known or suspected threats to LDW sediments.

EPA is managing three sites:

- Terminal 117 (EAA-5)
- Rhone-Poulenc (RM 2.9-4.4 East) – Resource Conservation and Recovery Act (RCRA) Corrective Action
- Boeing Plant 2, including part of Jorgensen Forge (EAA-4)

Ecology is managing the following sites:

- Jorgensen Forge, upland of the EPA-managed area (EAA-4) – Agreed Order

- Duwamish Shipyard (RM 1.3-1.6 West) – Final draft Agreed Order; public comment period during summer 2008
- Kenworth Truck/PACCAR (RM 3.9-4.4 East) – Negotiating Agreed Order for upland investigation and cleanup
- North Boeing Field/Georgetown Steam Plant (EAA-3) – Negotiating Agreed Order for upland investigation and cleanup
- Industrial Container Services/Trotsky Property/Former Northwest Cooperage (EAA-2) – Potentially Liable Party (PLP) determination pending
- Glacier Northwest/Reichhold Chemical (RM 1.3-1.6 West) – PLP determination pending

Ecology contractors have collected site characterization samples at the following sites:

- Soil, groundwater, and sediment at Industrial Container Services/Trotsky Property/Former Northwest Cooperage (EAA-2) – April through July 2007
- Soil, groundwater, and bank sediment/soil at South Park Marina (EAA-5) – September 2007 through March 2008

In addition, Ecology plans to collect soil and groundwater samples at Douglas Management Company/Alaska Marine Lines Dock 2 (EAA-2) during summer 2008.

The total number of sites which need to be assessed in the entire LDW storm drain and CSO basin has not been estimated at this time.

3.4 Phthalate Studies

Phthalates, particularly bis(2-ethylhexyl)phthalate (BEHP), are contaminants of concern in the majority of the early action sites in the LDW. They are a class of industrial compounds commonly used as softeners in plastics, as solvents, as oil in vacuum pumps and electrical capacitors and transformers, and as carriers for fragrances and pesticides. Available literature indicates that phthalates are also a component of many consumer products. Phthalates can be released to the air and are likely contributing contaminants to stormwater and affecting sediments in the river. In 2003, King County and SPU joined with the city of Tacoma to conduct joint testing of various products and materials to help identify potential sources of these chemicals. This study is described in more detail in the July 2007 *Source Control Status Report* (Ecology 2007g).

3.4.1 Atmospheric Deposition Sampling

Because of high levels of phthalates in vehicle-related solid products, the phthalate source study continued with emphasis on evaluating whether atmospheric deposition contributes significant amount of phthalates to sediments in the LDW.

King County collected four rounds of samples from January 2005 through May 2005 at four sampling stations in the LDW drainage area, three stations in the Duwamish valley, and a fourth on Beacon Hill. The most significant finding is that BEHP concentrations were up to three times greater in the Duwamish valley stations than the Beacon Hill station. Results compared well with

**Table 2. Property Assessments Completed,
2003 to March 2008**

Source Control Area	Property Assessed
EAA-1 (Duwamish/Diagonal)	Chevron USA Site No. 4097 (Chiyoda Property)
	Container-Care International, Inc. (Port of Seattle Terminal 106)
	Federal Center South
	Janco United (In progress)
	Transportation Services CFS (Port of Seattle Terminal 106W/106NW)
EAA-2 (Trotsky)	Alaska Washington Company
	Alki Construction Company
	ATC Distribution Group Inc./Automatic Transmission Parts
	Boyer Alaska Barge Lines
	Boyer Towing, Inc./Boyer Alaska Barge Lines/Boyer Logistics
	Cascade Mattress Factory
	Cunningham Manufacturing
	DaVinci Gourmet
	Douglas Management Company/Alaska Marine Lines Dock 2
	Ferguson Construction
	Fox Plumbing & Heating
	Hurlen Construction
	Industrial Battery Systems
	J & M Stamp & Form
	Northwest Building Tech Inc
	NW Center for the Retarded
	Pacific American Commercial (PACO)
	Pacific Northwest Fasteners
	Pacific Plumbing Supply
	PCT Construction
	Pioneer Human Services
	Trotsky Property (Industrial Container Services)
	Tucker-Weitzel Assoc.
	United Iron Works
	W.G. Wright and Associates
	Wells Trucking & Leasing
	WHECO
EAA-3 (Slip 4)	American Avionics
	ARCO #5218
	Aviation Fuel Storage/Shultz Distributing
	Crowley Marine

Source Control Area	Property Assessed
EAA-3 (Slip 4), Continued	First South Properties/Emerald Services
	Georgetown Steam Plant
	King County Airport Maintenance Shop
	Marine Vacuum Service
	North Boeing Field
	North Coast Chemical Company
EAA-4 (Boeing Plant 2/Jorgensen Forge)	Boeing Plant 2
	Jorgensen Forge
	King County International Airport (portion draining to EAA-4)
EAA-5 (Terminal 117)	Basin Oil
	Boeing South Park
	South Park Marina
	Terminal 117
EAA-7 (Norfolk CSO/SD)	Affordable Auto Wrecking
	ARCO Gas Station
	Associated Grocers
	Boeing Developmental Center
	Boeing Military Flight Center
	King County International Airport (portion draining to EAA-7)
	Northwest Auto Wrecking
RM 3.9-4.4 East (Slip 6)	Former PACCAR Site
	Former Rhone-Poulenc Site
	King County International Airport (portion draining to Slip 6)
	Museum of Flight
	Boeing Developmental Center
RM 1.3-1.6 West (Glacier Bay)	Alaska Marine Lines (Parcel 1)
	Alaska Marine Lines (Parcel 2)
	Allen Property
	Chemithon
	City of Seattle Parks
	Duwarnish Shipyard
	Glacier Northwest
	Klier-D.B. Property
	MRI Corp
	Sayler Property
	Wise Property

other studies conducted within the same airshed and within other regions. One outcome of this initial phase of sampling was that a redesign of the sampler was necessary.

After the passive air deposition sampler was modified, King County conducted a second phase of sampling from October 2005 to April 2007 (KCDNRP 2008). A total of 16 rounds of passive atmospheric deposition sampling were conducted at five sampling stations in the LDW drainage basin. Data on PAHs and phthalates were collected for all 16 rounds; PCB data were collected for 10 of the rounds. The sampling measured a combination of dry and wet deposition in urban/industrial neighborhoods; results were comparable to studies conducted in other urban/industrial areas.

Due to the nature of the passive atmospheric deposition sampling apparatus, the sampling did not assess gaseous absorption flux. However, total deposition results are believed to be acceptable for the heavier semivolatile compounds (such as BEHP, butyl benzyl phthalate, carcinogenic PAHs, and Aroclors 1254/1260) based on the results from other atmospheric deposition networks which show that these heavier compounds are primarily deposited via dry and wet deposition.

Based on a comparison with results from other atmospheric deposition networks that employed high-volume air sampling techniques to collect gaseous and particulate phase air samples, the total deposition results from this study are likely to be biased low for the lighter phthalates, low- to mid-range PAH compounds, and low- to mid-range PCB congeners. Since side-by-side comparison sampling of the passive atmospheric deposition samplers with high-volume air samplers was not conducted, it is not possible to assess the degree of bias (KCDNRP 2008).

The sampling stations were located at Beacon Hill (BW and BWR; original and relocated stations), Duwamish Valley (CE and CER; original and relocated stations), Georgetown (DZ), King County International Airport (KCIA), and South Park Community Center (SPCC). Sampling stations are shown on Figure 5.

The following range of air deposition flux values was observed (KCDNRP 2008):

Analyte	Range of Air Deposition Flux (ug/m ² /day)	Location of Highest Values
Butyl benzyl phthalate	0.163 to 7.007	SPCC
Bis(2-ethylhexyl)phthalate	0.261 to 12.240	CE
Benzo(a)pyrene	0.008 to 2.225	KCIA
Pyrene	0.035 to 4.652	KCIA
Aroclor 1254	<0.011 to 0.044	DZ
Aroclor 1260	<0.011 to 0.034	DZ

Detailed results are provided in King County's *Monitoring Report – October 2005 to April 2007* (KCDNRP 2008).

3.4.2 Sediment Phthalate Work Group

In fall 2006, the cities of Tacoma and Seattle, King County, Ecology, and EPA came together to form the Sediment Phthalates Work Group. The work group was formed to better understand how phthalates are reaching Puget Sound sediments and the related effects on humans and animals. The Sediment Phthalates Work Group was voluntarily created with representatives from each public agency. The work group recognized the challenges that municipal governments face regarding phthalates in sediments at important cleanup sites such as the Thea Foss Waterway and Lower Duwamish Waterway.

The goal of the Work Group was to summarize and evaluate existing information on phthalate sediment contamination issues, identify data gaps, and provide recommendations to address phthalate sediment contamination for regulatory agencies and the community to consider. During the 10-month process, the Work Group collected, summarized, and evaluated existing information to:

- document where phthalates are found and identify potential sources,
- define phthalate contamination concerns within current regulations,
- place sediment phthalate concerns in perspective with other sediment contamination risks and within the broader issue of phthalate risks from other exposure pathways,
- identify potential source control and treatment options,
- provide recommendations on next steps, and
- share findings with the public.

The Work Group developed recommendations for addressing the sediment phthalate problem, which are presented in the *Sediment Phthalates Work Group Summary of Findings and Recommendations* (City of Tacoma et al. 2007). The recommendations involve the following general areas of potential action:

- Further study and research to validate the Work Group's findings regarding the problem and identify other contaminants that follow pathways similar to phthalates
- Education of appropriate agencies and the community on the Work Group's findings
- Interaction with Puget Sound Partnership and air agencies to address the air-stormwater-sediment pathway
- Evaluation and implementation (where appropriate) of stormwater source control and treatment options
- Management of phthalate recontamination at cleanup sites through site-specific operation and monitoring plans
- Consideration of an SMS rule amendment to address phthalates and other pervasive pollutants
- Coordination with other phthalate risk initiatives
- Development of recommendations regarding plasticized polyvinyl chloride—alternatives, building material standards, bans, engagement with plastics industry, incentives, etc.

One key finding is that phthalates reach sediments via a complex major pathway involving off-gassing from plasticized polyvinyl chloride products to air followed by attachment to atmospheric particulates, deposition to the ground, and transport to sediments through stormwater. This pathway was not initially obvious; the group pieced it together based on research on phthalate use in the marketplace, resulting potential sources, and occurrence in various media. The Work Group believes that the air-stormwater-sediment pathway is of critical importance. Detailed results are presented in the Work Group's report (City of Tacoma et al. 2007).

Further information on the Sediment Phthalates Work Group can be found at Ecology's website (http://www.ecy.wa.gov/programs/tcp/smu/phthalates/phthalates_hp.htm).

3.5 Public Involvement

3.5.1 Source Control Communications

A website to facilitate communication within the SCWG, known as the *Toolkit*, was developed and launched in February 2008. The members of the SCWG were given usernames for logging in and were trained on the purpose and use of the Toolkit. The purpose of this website is to support the sharing of documents and presentations among workgroup members. Members of the SCWG started uploading documents to the Toolkit in February 2008. The SCWG Communication Subcommittee will continue to poll users over the next few months to evaluate usefulness and necessary changes (Ecology 2008a).

3.5.2 Public Outreach

Ecology works with EPA and stakeholders according to the enhanced public participation efforts for the LDW Superfund site. Ecology public involvement activities are underway for all of the MTCA sites addressing source control issues within the LDW. Ecology coordinates with the Duwamish River Cleanup Coalition (DRCC) throughout the public involvement process. This may include such activities as coordination for public meetings and sharing of documents with DRCC for review, as appropriate.

Source Control Focus Sheet (Summer 2007)

Members of the SCWG developed an updated version of the Source Control Focus Sheet. This focus sheet was translated into Spanish. The focus sheet was distributed at the Duwamish River Festival and will be distributed at other upcoming public meetings.

Duwamish River Festival (August 18, 2007)

The third annual Duwamish River Festival was held on August 18, 2007 in Seattle's South Park neighborhood. Attendance increased in size from last year to over 700 people. The family-friendly environmental festival provided updates on the LDW Superfund cleanup, source control pollution prevention information, natural yard care tips, and more.

Ecology collaborated with numerous agencies and stakeholder groups to provide updates to the community about the LDW cleanup process. Program partners included EPA, Ecology, DRCC,

King County, city of Seattle, Port of Seattle, The Boeing Company, SPU, PHSKC, state Department of Health, Puget Sound Clean Air Agency (PSCAA), Seattle Parks & Recreation, Green Duwamish Central Puget Sound (WRIA 9) Watershed-Forum of Local Governments, Alki Kayak Tours, and NRC Environmental.

Planning is underway for the 2008 festival, which will be held on August 23. The steering committee includes representatives from DRCC, Ecology, and King County.

Duwamish Boat Tours (2007)

Ecology has conducted six tours of the LDW by boat since July 2007. Since conducting the first tours in March 2007, Ecology has taken 75 people on a boat tour of the LDW. The attendees included Ecology site managers, inspectors, and management, federal and tribal elected officials, local agency representatives, and news media. Tours will continue in late spring 2008.

Public Meetings

Ecology coordinated a community meeting at South Seattle Community College on June 12, 2007 to provide information about PCB contamination at North Boeing Field.

Ecology met with 50 stakeholders on November 27, 2007 at the South Seattle Community College to announce and describe the Urban Waters Initiative.

EPA coordinated a public meeting on November 29, 2007 at Concord Elementary School in Seattle to provide information about the draft results of the RI Phase 2.

Source Control/Urban Waters Inspection Focus Sheet

Ecology developed a focus sheet for use by the source control inspectors. The purpose of the focus sheet is to help businesses understand the reason for the inspections and the background on the program. The focus sheet will be printed and distributed to the inspectors in May 2008.

3.6 Other City of Seattle and King County Activities

3.6.1 Seattle Street Sweeping Pilot

The city of Seattle implemented a pilot project to evaluate street sweeping as a tool to reduce the amount of pollutants discharged from city storm drains (SPU 2007). New high efficiency street sweepers are being used to remove street dirt and debris from designated streets in two residential areas (West Seattle and Columbia City) and one industrial area (Duwamish/Diagonal).

Testing in the two residential areas began in June 2006 and concluded in June 2007. Testing in the Diagonal industrial area began in November 2006 and finished in June 2007. At each test site, a 10 to 25 block area was divided into a control area and a sweep area. Both control and sweep areas were cleaned at the beginning of the pilot, establishing a baseline for analyzing whether street sweeping reduces pollutants and sediment.

The test area was swept every two weeks, but the control area was not swept. Catch basin sediment, sweeper waste, and street dirt accumulations were measured every month from the test and control areas to evaluate the quantity of material removed by the sweeping effort. Catch basin, sweeper waste, and street dirt samples were also collected every month. These samples were composited on a quarterly basis and analyzed for metals, semivolatile organic compounds (SVOCs), PCBs, grain size, and total organic carbon (TOC) content.

SPU is analyzing the collected data and will report its findings in 2008.

3.6.2 Surface Water Quality Complaints

Information on surface water quality complaints received during the June 2007 through March 2008 period was unavailable at the time this Status Report was prepared.

3.6.3 CSO Technology Pilot

The King County Wastewater Treatment Division plans to conduct pilot testing of various CSO treatment technologies. The county held a stakeholder workshop on December 18, 2007 to share information about the technologies being considered, to hear from stakeholders their views on other promising technologies to consider for testing, and specific pollutants of concern.

CSO control options include:

- Stormwater control or separation from the sanitary sewer
- Conveyance improvements
- Storage and transfer to secondary treatment plants
- Satellite treatment

The County's 2005 CSO program update (KCDNRP 2006) recommended pursuing pilot testing of high-rate clarification processes while conventional primary clarification remained the baseline treatment technology. The objective of the pilot program is to investigate high-rate technologies to assess the feasibility for CSO treatment. A work plan for the pilot-scale testing at a treatment plant was scheduled to be completed during the first quarter of 2008 (KCDNRP 2007).

3.7 Other Ecology Activities

3.7.1 Ecology Source Control Database Development

Ecology started work on a web-based Lower Duwamish Source Control Database in March 2005. Users will be able to track source control activities for each source control area, including site evaluations, chemicals of concern, location, actions taken, and parties responsible.

Ecology contractor SAIC was hired to load the database. Various problems have delayed progress of this task; SAIC has been working with Ecology's database programmer to resolve issues.

The database is expected to be ready for data loading in May 2008. The reporting function is still in development and will be finished in the summer of 2008. A publicly available version is planned but at this time no date has been established.

3.7.2 Lower Duwamish Waterway Industrial Stormwater Monitoring Study

Ecology plans to collect and analyze samples of stormwater sediment from selected, representative industrial stormwater facilities. The goal is to assess the potential for these types of facilities to contaminate sediments and to estimate the loading contribution to sediments. The project is the first step in determining if facilities covered under the Industrial Stormwater General Permit are potential sources of sediment recontamination.

A Literature Review and Summary of Existing Information report was completed in December 2007 (SAIC 2007j). This report includes a literature review of potential sediment sampling devices that would accomplish the study objectives, a review of industrial stormwater studies conducted by Ecology and others, and recommendations for potential monitoring sites.

A Sampling and Analysis Plan was prepared by Ecology contractor SAIC in early Spring 2008; installation of sampling devices at two to three facilities is planned for late Spring 2008 as a pilot project before full-scale implementation of the sampling program, which is scheduled for Fall 2008. Facilities sampled are intended to be representative of industry types and geographic locations within the LDW.

3.7.3 Bank Sampling

Ecology is planning to conduct a reconnaissance-level sampling effort to help characterize the nature and extent of contamination of the upland shoreline along the LDW. Over 1,200 surface sediment samples have been analyzed to characterize sediment contamination in the LDW, however none of these characterize the higher intertidal zone or nearshore upland areas. To date there have been a few property-specific sampling events, usually associated with a MTCA order for a complete site characterization. However, most of the adjacent properties along the LDW are not under an order nor are they listed as contaminated sites by Ecology.

Ecology tentatively plans to collect samples at approximately eight locations along the LDW upland shoreline, including sand beaches with pilings, armored riprap, fill material of questionable origins, and apparent slag piles from industrial operations. Samples will be collected from the intertidal zone above the +4 foot elevation, as well as from above the mean higher high water line.

A Sampling and Analysis Plan for this effort will be prepared during late spring/early summer 2008.

Table 3
General Source Control Action Items

Action Item	Priority	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
Prepare semi-annual LDW Source Control Status Reports	Medium	Ecology	Ongoing	NA		
Locate/track 22 "unknown" outfalls	Medium	Ecology, SPU	Planned	TBD		
Conduct sampling of bank soils and high intertidal sediments	Medium	Ecology	Planned	2008		
Monitor upland spills	Low	Ecology	Ongoing	NA		
Continue source control and NPDES inspections as needed within LDW drainage basin	Medium	SPU, Ecology	Ongoing	NA		
Collect storm drain system solids samples (in-line and grab samples) as needed to conduct source tracing within the LDW drainage basin	Medium	SPU	Ongoing	TBD		
Continue study of the air-to-stormwater-to-sediment contaminant pathway	Medium	City of Tacoma, City of Seattle, King County, Ecology, EPA	Ongoing	TBD		
Evaluate and implement stormwater source control and treatment options to address air-to-stormwater pathway, as appropriate	Medium	City of Tacoma, City of Seattle, King County, Ecology, EPA	Planned	TBD		
Continue public involvement and outreach efforts	Medium	Ecology, EPA, King County, DRCC	Ongoing	NA		
Complete development of LDW Source Control Database	High	Ecology	In Progress	August 2008		

	High = High priority action item -- to be completed prior to or concurrent with sediment cleanup
	Medium = Medium priority action item -- to be completed prior to or concurrent with sediment cleanup
	Low = Low priority action -- ongoing actions, or actions to be completed as resources become available
	Completed action item

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4.0 Source Control Activities: Tier 1 Areas

Based on results of the RI Phase 1, seven early action candidate sites were proposed. These EAAs, also referred to as Tier 1 areas, are shown in Figure 1. Tier 2 and Tier 3 areas are discussed in Section 5.

The potential for sediment recontamination associated with these EAAs is described in detail in the Data Gaps reports and SCAPs, as cited in the text below for each EAA. These documents are available from Ecology's LDW Source Control website.⁴ Source control actions that were conducted between 2003 and June 2007 are described in the July 2007 *Source Control Status Report* (Ecology 2007g). The current status report describes source control actions that were conducted between July 2007 and March 2008.

Tables 4 through 10 list the action items that were identified in the SCAP for each source control area. It includes new source control action items that have been added since initial publication of the SCAP. Source control activities conducted between July 2007 and March 2008 are described in the following sections. Properties for which no source control activities were conducted during this period are not discussed below, however all identified actions items (completed, in progress, or planned) are listed in Tables 4 through 10.

Site maps are presented in Figures 7 through 13 to help identify locations discussed in the text below. Additional figures are available in the referenced reports.

4.1 Early Action Area 1 (Duwamish/Diagonal)

EAA-1 and relevant adjacent and upland properties are shown in Figure 7. Action items for this source control area are listed in Table 4.

Location	RM 0.1-0.9 East
Chemicals of Concern	PCBs, BEHP, PAHs, lead, zinc
Data Gaps Evaluation	June 9, 2003 (SAIC 2003)
SCAP	December 1, 2004 (Ecology 2004b)

Source control actions that are area-wide (i.e., not associated with a specific adjacent or upland property) are described below.

⁴ http://www.ecy.wa.gov/programs/tcp/sites/lower_duwamish/lower_duwamish_hp.html

Table 4
Source Control Action Items: Early Action Area 1 (Duwamish/Diagonal CSO/SD)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
Diagonal Ave. S. CSO/SD	Conduct inspections of 200 businesses in the western portion of the Diagonal Ave. S. CSO/SD basin	Medium	SCAP	SPU	Complete	2001	March 2002	Over 90% of facilities in compliance with stormwater source control requirements; reinspect as needed to achieve compliance
	Remove accumulated sediment from the lower portion of the Diagonal Ave. S. CSO/SD	High	SCAP	SPU	Complete	Fall 2004	November 2004	Video-inspect to identify connections and potential dischargers, and to verify that sediment removal was complete
	Video-inspection to identify connections and potential dischargers and to verify that sediment removal was complete	High	Follow-On	SPU	Complete	--	February 2005	
	Clean catch basins in the public right-of-way	Medium	New	SPU	In Progress	June 2008		
	Conduct sediment trap sampling	High	New	SPU	Ongoing	2010		
Duwamish/Diagonal Basin	Conduct first round of multi-agency business inspections	Medium	SCAP	SPU, King County	Complete	July 2004	September 2004	Over 90% of facilities in compliance with stormwater source control requirements; reinspect as needed to achieve compliance
	Conduct second round of multi-agency business inspections	Medium	Follow-On	SPU, King County	Complete	2007	December 2007	
Nevada Street SD	Investigate the Nevada Street SD to locate the outfall, identify connections, confirm drainage areas, and sample sediments	High	SCAP	SPU	Complete	2004	June 2005	All manholes in the right-of-way were clean and could not be sampled; determine whether any further action is needed.
	Collect a sediment sample from the last manhole above the outfall	Medium	Follow-On	SPU	Planned	2007		
Container Care Int'l (T-106 SW)	Conduct inspection to confirm that all issues related to poor housekeeping and BMPs have been addressed	Low	SCAP	SPU, Ecology	Complete	May 2003	May 2003	
UPRR Argo Yard	Review existing information to assess the potential for sediment recontamination from this property	Low	SCAP	Ecology, SPU, UPRR	Complete	Summer 2005	2005	Refer to King County for Site Hazard Assessment; source control staff will remain vigilant for evidence of contaminant infiltration
	Conduct Site Hazard Assessment	Low	Follow-On	King County	Planned	TBD		
Terminal 108	Conduct groundwater investigation to quantify levels of COCs in groundwater, obtain information about groundwater flow, and assess the potential for sediment	Medium	SCAP	Port of Seattle	Complete	Spring 2005	October 2007	
	Develop work plan describing source control strategy to be implemented	Medium	New	Port of Seattle	Complete	--	February 2008	
	Develop Environmental Conditions Report and Source Control Strategy Plans for Eastern and Western parcels	Medium	New	Port of Seattle	In Progress	November 2008		Implement appropriate source control actions
	Implement appropriate source control actions	Medium	Follow-On	Port of Seattle	Planned	2009		
GSA / Federal	Investigate to determine whether this facility	Low	SCAP	Ecology, EPA,	Complete	June 2004	June 2004	Clean and repair drainage system; correct

Table 4
Source Control Action Items: Early Action Area 1 (Duwamish/Diagonal CSO/SD)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
	Clean and repair storm drain system; correct housekeeping issues	Medium	Follow-On	GSA	Planned	2005		
JANCO-United, Inc.	Review existing information and conduct a site inspection to determine if wastes dumped on ground have been removed and to assess the potential for sediment recontamination	Low	SCAP	Ecology	Complete	February 2005	December 2006	Reviewed data December 2006. Soil samples collected by EPA in 1984 contained VOCs and SVOCs; no record that the soil was removed or the illegal pipe to storm drain was sealed. Conduct Site Hazard Assessment.
	Conduct Site Hazard Assessment	Low	Follow-On	Public Health-Seattle & King County	Planned	August 2008		
Former Rainier Brewery Property	Sample catch basin solids; identify required actions	Medium	New	SPU	Complete	NA	January 2008	Require property owner/operator to take corrective action; verify completion
	Require property owner/operator to take corrective action to remove catch basin solids; verify completion	Medium	New	SPU	Complete	2008	January 2008	
Other Upland Properties	Review files for 37 identified upland sites	Low	SCAP	Ecology	Planned	March 2005		
	Review files for LUST sites; determine need for additional action	Low	SCAP	Ecology	Planned	April 2005		

Priority:

	High = High priority action item -- to be completed prior to sediment cleanup
	Medium = Medium priority action item -- to be completed prior to or concurrent with sediment cleanup
	Low = Low priority action -- ongoing actions, or actions to be completed as resources become available
	Completed action item

Type:

SCAP	Action item identified in the EAA-1 SCAP
Follow-On	Action item is a follow-on to an action item identified in the EAA-1 SCAP
New	Action item identified after publication of the EAA-1 SCAP

Source Control Actions

- SPU conducted a second cycle of business inspections in the Duwamish/Diagonal basin in 2007. Six inspections were conducted at four businesses in the Diagonal CSO basin, including one screening inspection, three full site inspections, and two follow-up inspections. In the Diagonal SD basin, 131 inspections were conducted at 83 businesses. This includes one screening inspection, 79 full site inspections, and 51 follow-up inspections. Facilities where SPU conducted inspections in 2007 are described below, and are listed in Appendix B. Inspection locations are shown on Figure 3.
- SPU continues to monitor storm drain particulates using sediment traps to identify sources of chemicals which may recontaminate sediments. Sediment traps have been installed at seven sites in the Diagonal Avenue CSO/SD system. As of February 2008, a total of 10 rounds of sediment trap samples had been collected. Zinc, total petroleum hydrocarbons (TPH)-oil, and BEHP continue to be the primary chemicals of concern in the system. Zinc concentrations exceeded the SQS in 49 percent of the 45 samples collected through 2007, while BEHP exceeded the SQS in about 86 percent of the samples. TPH-oil was above the MTCA Method A soil cleanup level (2,000 mg/kg) in 52 percent of the samples. PCBs were detected in 96 percent of the samples, but only one sample exceeded the SQS (Sample ST5, collected on March 28, 2006).
- The city of Seattle hired a contractor to clean all of the catch basins located in the public right-of-way within the Diagonal Avenue S. CSO/SD basin. The contractor cleaned 3,503 structures between August 2007 and March 2008. Work is expected to be complete in June 2008.
- In January 2008, SPU confirmed that concentrations of PCBs (8.4 to 189 mg/kg dry weight [DW]) were still elevated in sediment collected from catch basins on the north end of the former Rainier Brewery property. These catch basins drain to the Diagonal SD system on Airport Way S. PCBs (to 189 mg/kg DW), 4-methylphenol, dibenzofuran, PAHs, carbazole, and phthalates were detected (Schmoyer 2008). Elevated concentrations of PCBs had previously been found in catch basins at this property (177 to 2,226 mg/kg DW) and in catch basins in the right-of-way downstream of this property (17.5 mg/kg DW) in 2004–2005.
- The property operator, Ariel Development, Inc., jetted the storm drains in January 2008 and cleaned the catch basins in the portion of the property that drains to the Diagonal Avenue S. CSO/SD. SPU also jetted lines and cleaned catch basins downstream of this property along Airport Way S.

4.1.1 Port of Seattle Terminal 108 / Former Chiyoda Property

Current Operations	Container storage
Historical Operations	Sewage treatment plant; PCB-contaminated sediment treatment lagoons
Address	4525 Diagonal Ave. S., Seattle 98108
Facility/Site ID	2344 (Chevron Seattle Terminal 4097)
Chemicals of Concern	PCBs, PAHs, cadmium, lead, chromium, petroleum hydrocarbons
Media Affected	Groundwater, soil

Source Control Actions

- The Port of Seattle conducted an independent groundwater investigation at Terminal 108 from 2006 to 2007; results were published in October 2007 in *Port of Seattle T-108 Groundwater Investigation Final Report* (Pacific Groundwater Group 2007). The purpose of this investigation was to determine if groundwater is a source of contamination to sediments. PCBs, PAHs, and petroleum compounds were not detected in the most recent sampling rounds; total and dissolved metals were detected but did not exceed groundwater-to-sediment screening levels. The report concluded that groundwater at Terminal 108 is not contributing contamination to surface water and sediment in the LDW (Pacific Groundwater Group 2007).
- Low levels of PCBs (0.5 to 3.0 mg/kg) were detected in shallow soils near the LDW bank, and higher concentrations have been detected farther inland and at depth on the property. Because of concerns about the potential for soil erosion to the LDW, the Port of Seattle prepared the *Terminal 108 – Source Control Strategy Work Plan* in February (Windward 2008a). The work plan describes the development of source control strategies to be implemented by the Port as an independent action at Terminal 108.
- The Port is developing an Environmental Conditions Report to be completed by July 2008. The report will summarize and document previous environmental and source investigations relevant to the Terminal 108 property, and separate Source Control Strategy Plans for the Eastern and Western parcels.
- The Port's Source Control Strategy Plans will provide the framework used to identify and assess source control issues on the property, determine the most appropriate and effective implementation and control systems (e.g., best management practices and remedial actions), and establish long-term monitoring procedures to assess source control performance and ongoing environmental conditions at the property (Windward 2008a). The Strategy Plans for the Eastern and Western parcels are scheduled to be completed in October and November 2008, respectively.

4.1.2 Former JANCO-United Site

Current Operations	Air conditioning and heating storage warehouse
Historical Operations	Janitorial supply
Address	4400 Block of Fourth Ave S., Seattle 98108
Facility/Site ID	5568786
Chemicals of Concern	Phthalates, chlorinated benzenes
Media Affected	Soil, stormwater

Source Control Actions

- PHSKC was scheduled to perform a Site Hazard Assessment (SHA) at this location in 2007. PHSKC started the SHA but was directed to conduct SHAs at other Puget Sound Initiative sites. PHSKC reports that it will complete the SHA for JANCO-United during summer 2008.

4.2 Early Action Area 2 (Trotsky Inlet)

EAA-2 and relevant adjacent and upland properties are shown in Figure 8. Action items for this source control area are listed in Table 5.

Location	RM 2.1-2.2 West
Chemicals of Concern	PCBs, phthalates, mercury, lead, zinc, dichloro-diphenyl-trichloroethane (DDT), dieldrin
Data Gaps Evaluation	February 2007 (SAIC 2007b)
SCAP	June 29, 2007 (Ecology 2007b)

Source control actions that are area-wide (i.e., not associated with a specific adjacent or upland property) are described below.

Source Control Actions

- During 2007, SPU conducted 36 business inspections at 24 facilities in the EAA-2 storm drain basin that discharges at the Second Avenue S. outfall. Of these, three were screening inspections, 21 were full site inspections, and 12 were follow-up inspections. Inspection locations are shown in Figure 3.
- Ecology collected a sediment sample from the mouth of the Second Avenue S. outfall pipe in early May 2007 to evaluate whether contaminants are currently being transported to the EAA-2 inlet via this pathway. PCBs (3.6 mg/kg DW, 191 mg/kg OC), DDT compounds (0.5 mg/kg DW total), BEHP (2.2 mg/kg DW, 117 mg/kg OC), butylbenzyl phthalate (0.88 mg/kg DW, 46.8 mg/kg OC), and dimethylphthalate (0.13 mg/kg DW) exceeded SQS and/or Apparent Effects Threshold values.
- A whole water sample from the outfall was also collected; arsenic (8.8 ug/L), chromium (2.1 ug/L), lead (2.1 ug/L), zinc (57.8 ug/L), and aldrin (0.0012 ug/L) were detected.

Table 5
Source Control Action Items: Early Action Area 2 (Trotsky Inlet)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
Second Avenue S. Storm Drainage	Collect storm drain outfall pipe sediment and water samples to evaluate whether contaminants are currently being transported to the EAA-2 inlet via this pathway.	High	SCAP	Ecology	Complete	--	August 2007	
	Evaluate results of outfall pipe sediment and water samples	High	Follow-On	Ecology	In Progress	May 2008		
	Collect additional inline sediment samples to evaluate the levels of COCs with respect to sediment recontamination in this drainage.	High	SCAP	SPU	Planned	2007/2008		If COCs are present in the storm drain line, conduct source tracing
	If COCs are present in the storm drain line, conduct source tracing to identify sources of contaminants.	High	SCAP	SPU	Planned	2008		
	Review and update NPDES permits as needed.	Low	SCAP	Ecology	Ongoing	As needed		
	Conduct business source control inspections/re-inspections to verify that facilities comply with applicable regulations and BMPs and to conduct source control, as needed	Medium	SCAP	SPU, Ecology	In Progress	2007/2008		
	Review facility SWPPPs as needed to ensure control of potential contaminant releases to EAA-2 sediments.	Low	SCAP	Ecology/SPU	Planned	2007		
Reservoir Overflow	Repair West Seattle Reservoir to remove source of water to the overflow pipe that discharges to the head of the inlet	Low	New	City of Seattle	Planned	2010		
Industrial Container Services	Conduct additional site characterization to evaluate concentrations of COCs in groundwater, bank and intertidal sediments, and seeps	High	SCAP	Ecology	Complete	--	August 2007	Identify additional data gaps based on sampling results
	Identify additional data gaps based on sampling results and determine means to fill them	High	SCAP	Ecology	Ongoing	May 2008		
	Conduct cleanup as needed to eliminate sources of contaminants to EAA-2	High	SCAP	Industrial Container/Trotsky	Planned	2008/2009		
	Issue CERCLA 104(e) letter to facility/site/property owners to obtain additional information on historic contamination sources.	Medium	SCAP	EPA	Complete	--	October 2006	Review responses to CERCLA 104(e) letter
	Review responses to CERCLA 104(e) letter	Medium	SCAP	EPA/Ecology	Planned	2008		
	Identify PLPs for this site.	Low	New	Ecology	In Progress	2008		
	Conduct periodic inspections to verify that facility complies with applicable regulations and BMPs	Medium	SCAP	KCIW	Ongoing	As needed		
	Investigate destination of roof drainage from northwest corner of property	High	SCAP	King County/ Ecology/ SPU/ Industrial Container Services	Planned	2008		
	Evaluate the need for stormwater characterization (solids and whole water) from this facility if overflow occurs during heavy rainfall events	Medium	SCAP	Ecology/ KCIW/ SPU	Planned	2008		
	Conduct periodic air permit inspections to ensure compliance with permit conditions and BMPs	Low	SCAP	PSCAA	Ongoing	As needed		

Table 5
Source Control Action Items: Early Action Area 2 (Trotsky Inlet)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
Douglas Management Company	Conduct groundwater sampling along southern portion of property (adjacent to EAA-2 inlet) to evaluate potential for groundwater transport of contaminants from this site. Collect bank and seep samples	High	SCAP	Ecology	Planned	Spring 2008		
	Identify data gaps based on sampling results, and determine means to fill them.	High	SCAP	Ecology	Planned	2008		
	Conduct cleanup as needed to eliminate sources of contaminants to EAA-2.	Medium	SCAP	Alaska Marine Lines/ Douglas Management Company	Planned	2009 (if needed)		
	Issue CERCLA 104(e) letter to facility/property owners to obtain additional information on historic contamination sources.	Medium	SCAP	EPA	Complete	--	October 2006	Review responses to CERCLA 104(e) letter
	Review responses to CERCLA 104(e) letter	Medium	SCAP	EPA/Ecology	In Progress	May 2008		
	Continue periodic inspections to verify that site operations do not result in release of contaminants to EAA-2.	Low	SCAP	Ecology/SPU	Ongoing	As needed		
	Verify storm drainage pathway on the southern portion of the property.	Medium	SCAP	Ecology/SPU	In Progress	2008		If discharge is confirmed, assess the need for stormwater characterization.
	If stormwater discharge to EAA-2 is confirmed, assess the need for stormwater characterization (solids and whole water). Collect stormwater samples as needed.	Medium	SCAP	Ecology/ SPU/ Alaska Marine Lines/ Douglas Management	In Progress	2008		
Boyer Towing	Issue CERCLA 104(e) letter to facility/property owners to obtain additional information on historic contamination sources.	Medium	SCAP	EPA	Complete	--	October 2006	Review responses to CERCLA 104(e) letter
	Review responses to CERCLA 104(e) letter	Medium	SCAP	EPA/Ecology	In Progress	May 2008		
	Continue source control inspections to verify that facility complies with applicable regulations and BMPs.	Low	SCAP	SPU	Ongoing	As needed		
	Verify storm drainage pathway on the southern portion of the property.	Medium	SCAP	SPU	Planned	2007		If stormwater discharge to EAA-2 is confirmed, assess the need for stormwater
	If stormwater discharge to EAA-2 is confirmed, assess the need for stormwater characterization (solids and whole water) and conduct review of facility's SWPPP. Collect stormwater samples as needed.	Medium	SCAP	Ecology/ SPU/ Boyer Towing	Planned	2007		

Priority:

	High = High priority action item -- to be completed prior to sediment cleanup
	Medium = Medium priority action item -- to be completed prior to or concurrent with sediment cleanup
	Low = Low priority action -- ongoing actions, or actions to be completed as resources become available
	Completed action item

Type:

SCAP	Action item identified in the EAA-2 SCAP
Follow-On	Action item is a follow-on to an action item identified in the EAA-2 SCAP
New	Action item identified after publication of the EAA-2 SCAP

- The city of Seattle is scheduled to repair the West Seattle Reservoir in 2010; this will remove the source of water to the overflow pipe that discharges to the head of the inlet.

Current Operations	Steel drum reconditioning
Historical Operations	Same as above
Address	7152 First Ave. S., Seattle 98108
Facility/Site ID	2154 (Industrial Container Services WA LLC)
Chemicals of Concern	PCBs, metals, phthalates, PAHs, DDT, chlorobenzenes, petroleum hydrocarbons
Media Affected	Soil, groundwater, sediment

4.2.1 Industrial Container Services / Trotsky Property / Former Northwest Cooperaage

Source Control Actions

- In April 2007, Ecology contractor SAIC installed three groundwater monitoring wells at the Trotsky property. The three new wells and two existing wells were sampled in early May 2007; subsurface soil samples, intertidal sediments, and seep samples were also collected. A final data report was submitted to Ecology in July 2007. The data show a number of exceedances of state standards in soils, groundwater, and sediments (SAIC 2007g). SAIC is currently preparing a data interpretation report.
- PCB concentrations detected during the May 2007 sampling event were very high: 0.2 to 76.5 mg/kg DW in soil, 0.2 to 4.5 ug/L in groundwater, and 0.8 to 2,930 mg/kg DW (74 to 24,417 mg/kg OC) in sediment (SAIC 2007g).
- PLP Status Letters were mailed to the property owner, Herman Trotsky, and the operator, Industrial Container Services. Industrial Container Services submitted a response on March 4, 2008. Their letter is under review to determine their status as a PLP. Trotsky had not responded at the time this Status Report was prepared.

4.2.2 Douglas Management Company / Alaska Marine Lines

Current Operations	Shipping container storage
Historical Operations	Shipbuilding, metal and salvage, sand & gravel batch plant, marine cargo handling
Address	7100 Second Ave. S., Seattle 98108
Facility/Site ID	97573251 (Alaska Marine Lines)
Chemicals of Concern	Petroleum hydrocarbons, PCBs, mercury, volatile organic compounds (VOCs), SVOCs
Media Affected	No information

Source Control Actions

- Douglas Management Company granted Ecology permission for access to the property for site characterization activities. Ecology contractor SAIC is preparing a Sampling and Analysis Plan and associated work plans to install monitoring wells and collect samples to determine if the property may be a source of contaminants to sediments in the adjacent inlet. The site characterization work is tentatively scheduled for mid-June.
- SAIC is under contract to write a technical memorandum to review new information on this facility, obtained in response to EPA's Comprehensive Environmental Response, Compensation, and Liability Act 104(e) information request.

4.3 Early Action Area 3 (Slip 4)

EAA-3 and relevant adjacent and upland properties are shown in Figure 9. Action items for this source control area are listed in Table 6.

Location	RM 2.8 East
Chemicals of Concern	PCBs, phthalates, PAHs, metals
Data Gaps Evaluations	Slip 4: January 15, 2004 (SEA 2004) Crowley and First South Properties: October 2006 (SAIC 2006f) Upland property reviews: October 2006 – February 2007 (SAIC 2006a,b,d,e, 2007h,i) North Boeing Field (NBF)/GTSP: February 2007 (SAIC 2007d)
SCAP	July 2006 (Ecology 2006); Status Report – February 2007 (SAIC 2007e)

Source control actions that are area-wide (i.e., not associated with a specific adjacent or upland property) are described below.

Source Control Actions

- Boeing and SPU have been sampling sediment traps in the Slip 4 storm drains since 2005. Boeing collected samples from the seven sediment traps located on Boeing-leased property on October 29, 2007 (Bach 2007a). PCB concentrations were significantly lower in comparison to results from one year earlier, particularly in sediment trap T5 (800 mg/kg DW in 10/2006 to 62 mg/kg DW in 10/2007) and T1 (110 mg/kg DW in 10/2006 to 21.8 mg/kg DW in 10/2007).
- Boeing and SPU collected another round of sediment trap samples in March 2008 and redeployed the traps for the next round of sampling. Analysis results were not available at the time this Status Report was prepared.

Table 6
Source Control Action Items: Early Action Area 3 (Slip 4)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
North Boeing Field / KCIA / I-5	Distribute 2005/2006 inline sediment trap data for wet winter season	High	SCAP	SPU	Complete	May 2006	2006	Continue monitoring of sediment trap data
	Reinstall sediment traps and continue monitoring as needed	High	SCAP	SPU, Boeing	Ongoing			
	Conduct comprehensive analysis of sediment trap and catch basin data	High	SCAP	Ecology	Complete	August 2006	February 2007	
I-5 / Residential Drainage	Complete source tracing	High	SCAP	SPU	Complete	2006	2006	Continue monitoring of sediment trap data
	Clean out catch basins and lines	Medium	SCAP	Ecology, SPU, WSDOT	Planned	Summer 2007		
Georgetown Flume	Investigate connection toward North Boeing Field as a possible source of PCBs	High	SCAP	SPU, Boeing	Complete	June 2006	August 2006	
	Close connections, remove contaminated sediment, and demolish and/or replace the flume	High	SCAP	SCL, SPU	In Progress	2008		
Crowley Marine / Alaska Logistics	Conduct physical site inspection confirming outfalls and what they drain(ed)	Medium	SCAP	Ecology, SPU	Complete	2006	2006	
	Collect stormwater runoff and inline solids to assess recontamination potential of current operations	Medium	SCAP	Ecology, SPU	Planned	Fall 2008		
	Clean catch basins and drain lines	Medium	SCAP	Crowley	Planned	Fall 2008		
	Compile and evaluate historic groundwater quality data; complete historic use investigation to identify data gaps for recontamination potential (soil and groundwater).	Low	SCAP	Ecology, SAIC	Complete	2006	October 2006	Determine means to fill data gaps
	Determine means to fill data gaps	Low	SCAP	Ecology	Complete	2006	October 2006	Conduct groundwater investigation to fill data gaps
	Conduct groundwater investigation	Medium	Follow-On	Crowley	Planned	Fall 2008		
	Conduct a Site Hazard Assessment (SHA)		New	Ecology	Complete	--	February 2008	
First South Properties / Emerald Services	Collect stormwater runoff and inline solids to assess recontamination potential from any ongoing operations	Medium	SCAP	Ecology, SPU	Complete	August 2006	November 2006	
	Investigate two 4- to 6-inch outfalls located on the bank of First South Properties. Determine if the outfalls are still functioning and their drainage areas	Medium	SCAP	Ecology, SPU	Complete	August 2006	2006	
	Clean catch basins and drain lines	Medium	SCAP	Emerald Services	Complete	June 2006	2006	
	Reassess drainage swale for erosion and recontamination potential for phthalates	Medium	SCAP	Ecology	Complete	August 2006	2006	

Table 6
Source Control Action Items: Early Action Area 3 (Slip 4)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
	Compile and evaluate historic groundwater quality data; complete historic use investigation to identify data gaps for recontamination potential (soil and groundwater).	Low	SCAP	Ecology/SAIC	Complete	2006	October 2006	
	Determine means to fill data gaps (not required)	Low	SCAP	Ecology	Canceled	NA		
	Conduct sampling if necessary (not required)	Low	SCAP	Ecology	Canceled	NA		
Boeing Plant 2	Inspect Bldg. 2-122 area	Medium	SCAP	Ecology	Complete	Spring 2007	April 2007	Re-inspect as needed to ensure compliance with permit
	Re-inspect as needed to ensure compliance with NPDES permit	Low	Follow-On	Ecology	Planned	TBD		
	Sample onsite storm drain solids	Medium	SCAP	Ecology	Complete	Spring 2007	May 2007	
	Clean onsite storm drain system as necessary	Medium	SCAP	Boeing	Ongoing	NA		
	Assess existing groundwater data in the area.	Low	SCAP	Ecology, EPA	Planned	2007		
GTSP	Remove PCB contaminated soils; implement erosion or other source control as needed	High	SCAP	SCL	Complete	May 2006	May 2006	Conduct site-wide site characterization
	Conduct sitewide site characterization to assess need for additional remediation	High	SCAP	SCL	Planned	2008		To be done as part of Agreed Order for North KCIA/GTSP
North Boeing Field	Remove last 1,400 linear feet of PCB joint sealant	High	SCAP	Boeing	Complete	May 2006	2006	Characterize extent of PCBs in new joint seal
	Characterize extent of PCBs in new joint sealant material	High	Follow-On	Boeing	In Progress	TBD		
	Complete source evaluation at north drain line and complete clean-out	High	SCAP	Boeing	Complete	June 2006	November 2006	Continue source tracing in north drain line
	Continue source tracing in north drain line to identify and/or eliminate transport of PCBs to Slip 4	High	Follow-On	Boeing	In Progress	TBD		
	Slip-line and/or replace sections of the north storm drain line to reduce the potential for PCB transport to Slip 4	High	New	Boeing	Complete	2008	March 2008	
	Characterize the extent of PCBs in soil adjacent to the north drain line		New	Boeing	Complete	--	November 2007	
	Clean Oil/Water Separator 640 and catch basins	High	SCAP	Boeing	Complete	September 2006	August 2006	
	Clean out catch basins	High	SCAP	Boeing	Complete	NA		Continue source tracing in north drain line
	Review results of Ecology's TCP, Waste and Water programs, and King County/Hazardous Waste Inspections of NBF (Nov -Dec 2005)	Medium	SCAP	Ecology, EPA	Complete	June 2006	February 2007	
	Revise Stormwater Management Plan; conduct additional inspections of the NBF facility as necessary	Medium	SCAP	Ecology, Boeing	Planned	Summer 2007		

Table 6
Source Control Action Items: Early Action Area 3 (Slip 4)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
KCIA	Sample seven oil/water separators	High	SCAP	KCIA	Complete	September 2006	October 2006	Continue source tracing at KCIA
	Complete source tracing	High	SCAP	KCIA	In Progress	2007		
	Test for PCB joint sealant (~1acre); remove as necessary	High	SCAP	KCIA	Complete	October 2006	October 2006	
	Clean out catch basins and lines (if required)	High	SCAP	KCIA	In Progress	May 2007		
	Reinspect KC Surplus Storage, NE T-Hangars, and Schultz Distributing, Inc. as necessary to achieve compliance with BMPs	Medium	SCAP	SPU, Ecology	Complete	NA		Conduct follow-up inspections as needed
	Conduct follow-up inspections at Shultz Distributing, Inc. until compliance is achieved. Evaluate potential contaminants of concern and pathways.	Low	SCAP	SPU, Ecology	In Progress	Summer 2007		Conduct re-inspections as necessary to ensure compliance
	Continue business source control inspections and re-inspections as needed to verify that facilities comply with applicable regulations and BMPs	Low	Follow-On	SPU, Ecology	Ongoing			
North King County Airport / GTSP	Negotiate an Agreed Order for investigation and cleanup of the this site	High	New	Ecology, King County, city of Seattle, Boeing	In Progress	2008		
	Update NBF/GTSP <i>Summary of Existing Information and Identification of Data Gaps</i> report to incorporate recent activities and data.	Medium	New	Ecology	Planned	2008		
Upland Properties	Review data for contaminants of concern or pathways to Slip 4 for upland properties	Low	SCAP	Ecology, SAIC	Complete	June 2006	December 2006	
Adjacent and Upland Properties	Review municipal and industrial NPDES permits for COCs found in sediments	Low	SCAP	Ecology, EPA	Planned	2007		

Priority:

	High = High priority action item -- to be completed prior to sediment cleanup
	Medium = Medium priority action item -- to be completed prior to or concurrent with sediment cleanup
	Low = Low priority action -- ongoing actions, or actions to be completed as resources become available
	Completed action item

Type:

SCAP	Action item identified in the EAA-3 SCAP
Follow-On	Action item is a follow-on to an action item identified in the EAA-3 SCAP
New	Action item identified after publication of the EAA-3 SCAP

4.3.1 Crowley Marine Services

Current Operations	Cargo container storage, berthing facility
Historical Operations	Hydraulic parts manufacturing, lumber mill, pole-dipping, excelsior (wood packing material) manufacturing
Address	7400-8 th Ave S., Seattle 98108
Facility/Site ID	1940187 (Crowley Marine Services Inc 8 th Ave S)
Chemicals of Concern	Arsenic, copper, PAHs, PCBs, phthalates, petroleum hydrocarbons
Media Affected	Sediment, soil, groundwater

Source Control Actions

- An Early Notice Letter under MTCA was sent by Ecology to Crowley Marine Services on September 7, 2007 (Ecology 2008b).
- Ecology completed a Site Hazard Assessment (SHA) for the Crowley property in February 2008. The site's hazard ranking, an estimation of the potential threat to human health and/or the environment relative to all other Washington state sites, was determined to be a 2, where 1 represents the highest relative risk and 5 the lowest (Ecology 2008b).

4.3.2 Georgetown Steam Plant (GTSP) and Flume

Current Operations	Museum
Historical Operations	Power plant, cooling water discharge
Address	6700-13 th Ave S., Seattle 98108
Facility/Site ID	63485131 (Georgetown Steamplant) 6487827 (Seattle City Light Steamplant Georgetown)
Chemicals of Concern	PCBs, PAHs, tributyl phosphate, cadmium, chromium, petroleum hydrocarbons
Media Affected	Soil, groundwater, stormwater

Source Control Actions

- In December 2006, Rosewater Engineering prepared a *Georgetown Flume Drainage Improvement Project Preliminary Engineering Report* (Rosewater Engineering 2006). This report documented the preliminary engineering work, including alternatives analysis, for restoring drainage to areas served by the Georgetown Flume once the flume is removed.
- An 80 percent Design Memorandum was submitted by the city of Seattle in September 2007; Ecology had some concerns regarding construction sequencing. The City submitted 100 percent design drawings and specifications for the GTSP flume removal/replacement construction project to Ecology on January 30, 2008. Ecology provided review comments

and approved the project on March 4, 2008 (Edens 2008a). Work performed on the lower 400 feet of the flume will be conducted under the Slip 4 Early Action Area Administrative Settlement Agreement and Order on Consent No. 10-2006-0634 with the EPA. The remainder of the work will proceed as an Independent Remedial Action under MTCA.

- The Flume project consists of the following tasks (Ecology 2008c):
 - Removal and off-site disposal of all sediment contained in the flume (about 250 cubic yards).
 - Demolition, removal, and backfill of all wooden sections of the flume.
 - Plugging all existing input connections to the Flume from North Boeing Field.
 - Installing a new buried storm drain pipe from the GTSP to Slip 4. The new system will generally follow the alignment of the old flume. New pipe will be installed in sections that were previously wood or concrete-lined flume. Existing buried pipe sections of the flume inside NBF that are not needed for the new storm drain pipe will be abandoned. Other existing piped sections of the flume will be cleaned, slip-lined with new pipe, and reused for drainage. A tide valve will be installed in the outfall at Slip 4 to prevent sediment from entering the new pipe. The tunnel at the GTSP and one of the twin pipes will be closed in place.
 - Installing two biofiltration swales (sloping landscape elements that are designed to trap silt and pollutants) to treat stormwater from S. Myrtle Street that enters the new drain pipe prior to discharge into Slip 4.
 - Removal of low-level PCB-contaminated soil from two Seattle City Light substations located next to the Flume.
- Ecology staff and the City have developed a Fact Sheet and State Environmental Policy Act (SEPA) environmental checklist (Ecology 2008c; SCL 2008). The City has issued a Determination of Nonsignificance (DNS) for this project (City of Seattle 2008). The comment period for the DNS ended on March 5, 2008 (Ecology 2008a). Completion of the GTSP flume project will address one of the high priority source control action items for Slip 4, and will eliminate a potentially significant source of contaminants.

4.3.3 North Boeing Field

Current Operations	Aircraft finishing and testing; aircraft research and development
Historical Operations	Same
Address	7500 East Marginal Way S., Seattle 98108
Facility/Site ID	2050 (Boeing North Field) 2053 (Boeing North Field JP4 Tanks) 2753918 (Boeing North Boeing Field)
Chemicals of Concern	PCBs, PAHs, metals, VOCs, phthalates, petroleum hydrocarbons
Affected Media	Soil, groundwater, stormwater

Source Control Actions

Ecology is planning to update the NBF/GTSP *Summary of Existing Information and Identification of Data Gaps* report (SAIC 2007d) in 2008, which will provide maps and data tables summarizing recent activities, including the activities described below.

Storm Drain Replacement and Cleaning

- Boeing replaced and/or re-routed three sections of the north drain line during June/July 2007. A soil sampling investigation was conducted concurrently with the drain line replacement by Landau Associates (Landau 2007), as described below. In June 2007, Boeing decommissioned OWS-186 and replaced the north drain line along the east/west fence line. The oil-water separator was abandoned in place and filled with concrete grout. A new catch basin was installed at the northeast corner of Building 3-326 to collect water from CB-188 and from building roof drains. This line connects to a new CB-187A catch basin installed adjacent to the former OWS-186.
- In July, approximately 50 feet of the storm drain line east and upstream from the new catch basin CB-187A was replaced. Two new catch basins were installed. Portions of the stormwater system between MH-179A and CB-173, and between CB-174 and CB-173 were also replaced in July. Catch basin CB-175 was removed and replaced. A new manhole was also placed in this area.
- In November, Boeing slip-lined approximately 500 linear feet of concrete pipe within the north drain line near the GTSP. The remaining north drain line to the lift station was cleaned by pipe-jetting during October through December 2007.
- Boeing also began cleaning of the Apron A and Apron B flight line areas (storm lines upgradient of sediment trap T-4), but efforts were suspended in late November due to inclement weather and to allow Boeing's wastewater treatment plant to catch up on processing of the wastewater. At least one potential line break was observed in the flight line area (based on an abnormal quantity of soil removed from the line), and additional video surveys to evaluate the piping condition in this area were planned. A water leak was also observed at the location of CB-173.
- In conjunction with the storm drain line replacement, Landau Associates (for Boeing) conducted a soil sampling investigation during the replacement and/or re-routing of three sections of the north drain line between the northeast corner of Building 3-326 and CB-173 (sometimes referred to as MH-173). The purpose of the investigation was to further characterize the extent of PCBs in soil adjacent to the north drain line (Landau 2007).
- In February 2008, Boeing completed the injection grout sealing of MH-172, CB-173, and CB-188. A significant amount of water was found to be leaking into MH-173, and the injection grouting was successful in stopping this leak (Bach 2008). During the injection of grout around MH-172, Boeing observed some of the grout migrating through cracks in the Georgetown Flume, located a short distance from the manhole. This indicates that the grout was successful in filling voids in the immediate area around this manhole. All storm drain modifications where potential infiltration of contaminants had been identified or suspected are now complete (Bach 2008).

Soil Investigation During North Drain Line Replacement

- A total of 36 soil samples were collected from 21 locations along the north storm drain line trench. Results and sample location maps are provided in Landau's 2007 Technical Memorandum (*Stormwater System Line Replacement, North Boeing Field, June to September 2007*; Landau 2007). In addition, two water samples were collected. PCBs were detected in 28 of the 36 samples collected. Concentrations near the GTSP fence line ranged from <1 mg/kg DW to 2,680 mg/kg DW on the eastern edge of the excavation. PCB concentrations exceeded 10 mg/kg at seven other locations along this portion of the drain line excavation, with a concentration of 1,000 mg/kg DW detected along the north side of Building 3-323 (Landau 2007). A thick, black tar-like material and bricks, concrete debris, and asphalt pieces were observed at this location.
- Soil samples were collected along the northwest side of Building 3-323; PCB concentrations in this area were less than 2 mg/kg DW.
- In May 2007, Boeing sampled storm drain solids samples from catch basins CB-625, CB-626, and CB-154, located near boring SB-36 and Building 3-333. Results indicated PCB concentrations below 1 mg/kg DW; the drainage pipes were observed to be very shallow, constructed with plastic, and no infiltration of groundwater was evident (Bach 2007b).

4.3.4 King County International Airport

Current Operations	General aviation airport and related activities
Historical Operations	Military airport operations; general aviation
Address	7277 Perimeter Road S (main terminal); various tenant addresses
Facility/Site ID	2051 (King County Int Airport Maint Shop)
Chemicals of Concern	PAHs, phthalates, copper, zinc, petroleum hydrocarbons, PCBs
Affected media	Stormwater, groundwater

Source Control Actions

- An Ecology Hazardous Waste inspection was conducted in January 2008 at Show Quality Metal Finishing, located at 1115 S. Elizabeth Street, adjacent to the King County Airport Maintenance Facility (Jeffers 2008). An inspector from PSCAA participated in the site visit. The baghouse from this facility is located within a few feet of a catch basin that drains to the north drain line at NBF and ultimately to Slip 4. The inspector observed large accumulations of dust and postulated that dust could affect the nearby catch basin during filter replacement. Drainage on the property flows toward KCIA to a sump, and then flows toward the KCIA storm drain. At the time of the inspection, storm drainage appeared to infiltrate into the soil before reaching the storm drain. Oil was observed on the ground in the area of infiltration, possibly from an automobile repair shop located nearby. Ecology is planning to collect a sample of the solids in the KCIA catch basin⁵.

⁵ SPU sampled this catch basin in 2004 and found elevated concentrations of copper (6,320 mg/kg), lead (481 mg/kg), and zinc (3,420 mg/kg).

- King County Airport Maintenance Facility personnel have observed a fine black precipitate which collects on vehicles in the vicinity of the baghouse, suggesting that the dust collection process is not completely effective (Renaud 2008). Employees have also complained about air quality in the vicinity.
- An Ecology inspector visited the North Coast Chemical site, located at 1615 S. Graham Street, on June 25, 2007 (Myers 2007). Runoff from the eastern portion of this property is collected in a drainage ditch; flow in the ditch is to the south, where it enters a catch basin and the I-5 storm drain system. The current site operator, Ultrablock, Inc., indicated during the site visit that they are planning to fill in the drainage ditch and connect their stormwater runoff system directly to the city sewer system.

4.3.5 North King County Airport/Georgetown Steam Plant Administrative Order

Source Control Actions

- PLP determination status letters were sent to King County, the city of Seattle, and The Boeing Company on April 20, 2007.
- Ecology is currently negotiating an Agreed Order for this site. Drafts of the Agreed Order and a preliminary scope of work for the RI/FS were submitted to King County, the city of Seattle, and The Boeing Company (PLPs) in late October 2007. The PLPs submitted comments to Ecology in late November and early December (Edens 2007a).
- Ecology staff and the assistant attorney general met in early December to discuss the comments. A revised draft Agreed Order was submitted to the PLPs in March 2008, and a signed order is anticipated by the end of May 2008.
- Ecology staff prepared a Public Participation Plan that was submitted to the PLPs with the revised draft Agreed Order.
- Ecology is planning to conduct the RI/FS for the site and require reimbursement by the PLPs. Ecology may use existing budgeted funds for the initial planning tasks, however additional funding will be needed for the site investigation and FS tasks (Ecology 2008a).
- Based on the preliminary schedule for the RI/FS, the RI would not be completed until mid-2009, and therefore Slip 4 remediation will not be able to proceed until the 2009-2010 fish window at the earliest (Edens 2007b).

4.4 Early Action Area 4 (Boeing Plant 2/Jorgensen Forge)

EAA-4 and relevant adjacent and upland properties are shown in Figure 10. Action items for this source control area are listed in Table 7.

Location	RM 2.8-3.7 East
Chemicals of Concern	PCBs, phthalates, PAHs, metals
Data Gaps Evaluation	June 2007 (E&E 2007a)
SCAP	December 2007 (Ecology 2007d)

Table 7
Source Control Action Items: Early Action Area 4 (Boeing Plant 2/Jorgensen Forge)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
Boeing Plant 2	Evaluate the remaining Corrective Measures Study (CMS) study areas and continue to determine needed source control actions	Medium	SCAP	EPA, Boeing	In Progress	TBD		
	Continue to delineate and evaluate the EMF plume	Medium	SCAP	EPA, Boeing	In Progress	TBD		
	Complete design and implementation of dredging, capping, and/or backfilling of the Duwamish Sediment Other Area (DSOA) Interim Measure	High	SCAP	EPA, Ecology, Boeing	In Progress	TBD		
	Remove contaminated bank fill material	High	SCAP	EPA, Boeing	Planned	TBD		
	Conduct monthly sampling, including groundwater sampling and vapor sampling of the DDC wells and multiple points along the vapor treatment system	Medium	SCAP	EPA, Boeing	In Progress	TBD		
	Continue quarterly shoreline groundwater monitoring	High	SCAP	EPA, Boeing	In Progress	2008		
	Re-evaluate the SWPPP and make necessary changes if process/operational changes are made at Plant 2	Low	SCAP	Ecology, Boeing	Ongoing	TBD		
	Excavate PCB-contaminated soil in the substation area (southwest corner of Plant 2)	High	New	Boeing, Jorgensen	Planned	2008		
	Address removal of materials containing PCBs, including joint caulk material	High	SCAP	EPA, Boeing	In Progress	TBD		
	Conduct a joint hydrologic investigation with Jorgensen Forge to provide additional hydrogeologic data at the boundary of the two facilities	High	SCAP	Boeing, Jorgensen	Planned	TBD		
	Collect in-line sediment samples in the city of Seattle and city of Tukwila systems immediately prior to discharge to Plant 2's storm drain system	High	SCAP	EPA, Boeing	Planned	TBD		
	Conduct stormwater source control sampling of suspended solids and/or water along active storm drain lines	High	New	Boeing	In Progress	TBD		
	Implement catch basin solids sampling program	High	New	Boeing	In Progress	TBD		
	Determine if the city storm drain outfall discharging to EAA-4 at the South Park Bridge is Outfall J or another outfall	Medium	SCAP	EPA, city of Seattle	Planned	TBD		
Jorgensen Forge	Conduct a joint hydrologic investigation with Boeing to provide additional hydrogeologic data at the boundary of the two facilities	Medium	SCAP	Boeing, Jorgensen	Planned	TBD		
	Conduct soil and groundwater sampling in the southeast portion of the site (historically thought to have been occupied by a wood treating facility) to determine if arsenic contamination is present and if so, whether the contamination is leaching into the adjacent sediments	High	SCAP	Ecology, Jorgensen	Planned	TBD		
	Determine ownership of the 12- and 24-inch diameter stormwater lines located in an easement along the Jorgensen/Boeing property line, and determine the exact locations of the connections between these lines and the stormwater systems of Jorgensen, Boeing, city of Tukwila, and KCIA.	High	SCAP	Ecology, Jorgensen Forge, Boeing, city of Tukwila, KCIA	In Progress	Summer 2008		

Table 7
Source Control Action Items: Early Action Area 4 (Boeing Plant 2/Jorgensen Forge)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
	Assess the quality of discharged water and process through which water is discharged from the vacuum degasser pit, railroad scale sumps, argon-oxygen-decarbonization, and scale sumps.	Low	SCAP	EPA, Jorgensen	Planned	TBD		
	Continue to address PCB and metal contamination in sediments of the LDW and Shoreline Bank Area through EPA CERCLA Order No. 10-2003-0001	High	SCAP	EPA, Jorgensen	Planned	TBD		
	Conduct a source control investigation through Agreed Order No. DE 4127 to determine if the facility is an ongoing source of contamination to LDW sediments	High	SCAP	Jorgensen, Ecology	In Progress	2008		
	Develop a hydrogeologic site model as part of the source control investigation to characterize the groundwater system on site, including tidal influence	High	SCAP	Jorgensen, Boeing	In Progress	TBD		
	Review current groundwater monitoring data to ensure that groundwater is not a pathway for contaminants to the LDW	High	SCAP	Ecology, Jorgensen	Planned	TBD		
	Conduct groundwater sampling in the center of the property (previously occupied by Isaacson Iron Works) to determine if contaminants are present above screening levels	High	SCAP	Ecology, Jorgensen	Planned	TBD		
	Negotiate an Amended Administrative Order on Consent (AOC) for preparation of an EE/CA for cleanup of affected sediments along a portion of the LDW adjacent to this property	High	New	Ecology, Jorgensen, Earle M. Jorgensen	In Progress	TBD		
KCIA	Determine the connections between the KCIA stormwater system, the city of Tukwila system, and the 24-inch stormwater pipeline along the Jorgensen/Boeing property line	High	SCAP	Ecology, KCIA, Jorgensen, Boeing, city of Tukwila	In Progress	Summer 2008		
	Determine whether additional sampling of PCBs in the KCIA stormwater system and joint caulk material is necessary, based on review of PCB sampling results for KCIA Lot 12	Medium	SCAP	Ecology	Planned	TBD		
	Test, and as needed, remove any material that contains elevated levels of PCBs in this portion of KCIA (including caulk containing PCBs)	Medium	SCAP	Ecology, KCIA	Planned	TBD		
	Review the SWPPP and make necessary changes to prevent contaminants from entering the KCIA stormwater system	Low	SCAP	Ecology, KCIA	Planned	TBD		

Table 7
Source Control Action Items: Early Action Area 4 (Boeing Plant 2/Jorgensen Forge)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
East Marginal Way S.	Determine location and connection of large pipe crossing the northern edge of the Jorgensen property	High	SCAP	City of Tukwila, Jorgensen, KCIA	In Progress	Summer 2008		
	Determine connections between the KCIA stormwater system and the city of Tukwila system	High	SCAP	City of Tukwila, KCIA	In Progress	Summer 2008		

Priority:

	High = High priority action item -- to be completed prior to sediment cleanup
	Medium = Medium priority action item -- to be completed prior to or concurrent with sediment cleanup
	Low = Low priority action -- ongoing actions, or actions to be completed as resources become available
	Completed action item

Type:

SCAP	Action item identified in the EAA-4 SCAP
Follow-On	Action item is a follow-on to an action item identified in the EAA-4 SCAP
New	Action item identified after publication of the EAA-4 SCAP

No area-wide source control actions were conducted between July 2007 and February 2008.

4.4.1 Boeing Plant 2

Current Operations	Airplane parts manufacturing
Historical Operations	Same
Address	7755 East Marginal Way S., Seattle 98108
Facility/Site ID	2100 (Boeing Plant 2)
Chemicals of Concern	VOCs, PCBs, PAHs, metals, petroleum hydrocarbons
Media Affected	Groundwater, stormwater, soil, air, sediment

Source Control Actions

- EPA and Boeing are currently scheduling a dispute resolution meeting concerning various issues that must be resolved, as described below (Ecology 2008a).

In October 2007, EPA prepared a letter which addressed apparent ambiguities regarding Boeing's respective RCRA and Toxic Substances Control Act obligations. Boeing is currently evaluating the letter (Boeing 2008)

Shoreline Groundwater Monitoring

- The third quarter sampling event was conducted in August 2007, and included one-time analysis of all shoreline samples for SVOCs and PCBs to uniformly assess sediment source control constituents beyond those already covered by the ongoing shoreline monitoring program (Boeing 2007c). The monitoring report was submitted to EPA on November 7.
- The fourth quarter sampling event was conducted in November 2007; the shoreline sampling report for this event was submitted to EPA on February 13, 2008 (EPI 2008). Ten of the 28 wells sampled contained VOCs; benzene, trichloroethylene (TCE), and vinyl chloride were detected above screening levels. In addition, PCBs, cadmium, copper, nickel, manganese, selenium, silver, and zinc were detected above screening levels (EPI 2008).
- Beginning in 2008, the frequency of shoreline monitoring was reduced from quarterly to semi-annually; also, SVOCs will be monitored semi-annually as part of the regular shoreline sampling program at locations where SVOCs were detected during the August 2007 sampling event (Boeing 2008).
- The first 2008 shoreline monitoring event was scheduled to be conducted during February 4 through February 7, concurrent with the quarterly performance monitoring in the Building 2-66 sheetpile area (Boeing 2008). Results were not available at the time this report was prepared.

- EPA and Boeing agreed to arrange a meeting for a thorough discussion of the shoreline monitoring program and its results; this meeting is currently being scheduled (Boeing 2008).

Interim Measures

- In November 2007, Boeing submitted the *Interim Measure (IM) Evaluation and Completion Report at Building 2-66*; this document incorporated EPA comments and discussions held during an October 2007 meeting. EPA provided this report to the DRCC for review in January (Boeing 2008).
- EPA also approved termination of the Density Driven Convection system, which had removed approximately 685 pounds of solvent from groundwater at Plant 2 between March 200 and August 2007 (Boeing 2007c).
- Boeing is preparing a work plan for further remediation of solvent contamination within the sheetpile and in the wider southwest corner of Plant 2; quarterly groundwater sampling and operation of the transducers/data loggers associated with the now-terminated sheetpile mass removal Interim Measure (IM) continues, with data reported semi-annually. Sampling was scheduled to be conducted in February 2008.
- Two IM completion reports were prepared by Boeing to describe work associated with stormwater lines X and Y. Boeing submitted the *IM Completion Report 2-66 Area Soil Sampling, Stormwater Lines X & Y* in September 2007. Boeing submitted the *Draft IM Completion Report, Removal of Stormwater Lines X & Y in 2-60s Area* in July 2007; it will be finalized after receipt of EPA comments.
- Boeing is preparing additional draft IM work plans for several areas: OA-9, the South Yard area near Jorgensen, and Amended Administrative Order on Consent 2-31.21 TCE Degreaser.

Upland Comprehensive Planning and Remedy Selection

- Corrective action for the water side of the entire site is in development by Boeing, and it will include sediment remediation (extent to be determined), remediation of the southwest bank area, and additional investigation of the storm drainage system and soils around a former transformer area. Tetrachloroethylene plumes are known to be reaching the waterway. Metals contamination on the southern portion of the site, including the waterway bank, includes lead, antimony, chromium, and copper. Interim measures taken so far include the installation of sheet pile walls to contain three TCE plumes and installation of a soil-vapor extraction and air stripping system to remove solvents from groundwater. Comprehensive planning and remedy selection documents are being prepared by Boeing.
- Boeing submitted a *2-66 Area Data Gap Investigation Report (Vol. Vb)* in October 2007; it was approved by EPA in January 2008. The *2-40s Area Data Gap Investigation Work Plan (Vol. VIa)* was submitted in October 2007; a revised version is scheduled for submittal in February 2008. A draft *North Area Data Gap Work Plan (Vol. VIIa)* was submitted in October 2007 (Boeing 2008).

- Following several years of close coordination with EPA, Boeing submitted a Target Media Cleanup Level technical memorandum in August 2007. Disagreements persist between Boeing and EPA regarding appropriate cleanup levels (Boeing 2007c). Boeing requested details of EPA's discussions with the tribes under the Freedom of Information Action, and is currently reviewing the information received.

PCB Investigation

- In 2005, Boeing completed an investigation of PCBs found near a former Seattle City Light transformer area in the southwest corner of Plant 2 (EPA 2004). In 2008, following EPA approval, Boeing intends to excavate PCB-contaminated soil in the substation area and remove Boeing's storm drain lines in that area (E&E 2007a). Ecology and EPA are also working with other parties on non-Boeing sources in other storm drain lines.

PCB-Contaminated Caulk Assessment

- Boeing conducted work under the *Interim Measure Work Plan for Characterization of Caulk in Concrete Pavements at Boeing Plant 2*; a draft Phase I report was submitted to EPA in January 2008 (Boeing 2008). The study is intended to identify all PCB-contaminated caulk (defined as PCB concentration greater than 1 mg/kg) in outdoor concrete pavement at Plant 2 (Golder Associates 2007, Attachment F). The caulk assessment is focused on three areas of Plant 2 where caulk has been used in the joints and/or cracks in concrete pavements: the 2-60s/2-66 Areas, the 2-40s Area, and the 2-10 Area. It consists of review and evaluation of previously-collected caulk data and collection and analysis of caulk samples from the 2-40 and 2-10 Areas. The data will be used to group caulk from each area of the site into categories based on visual properties and PCB concentration, and to subsequently map the caulk type distribution over the site. Based on the results of this assessment, Boeing will evaluate methods for removal of all caulk with concentrations above 50 mg/kg, and removal or stabilization of caulk with concentrations between 25 and 50 mg/kg.

Pollution Prevention and Source Control

- A series of structural and non-structural measures have been adopted to control potential stormwater pollution at Plant 2 (Boeing 2007a). Work to remove 2-60s Area bulk coating products was expected to be completed in March 2007 (Boeing 2007b). Information on whether this work was completed was unavailable at this time this Status Report was prepared.

Stormwater Source Control Sampling

- The first round of source control sampling was conducted between October 2006 and April 2007, and results are presented in *Stormwater Source Control Round 1 Sampling Report, 2006-2007*, which was submitted to EPA in June 2007 (Golder Associates

2007)⁶. A revised report which incorporates EPA comments was submitted in October 2007.

- Sampling and analysis of suspended solids and/or water was conducted along 12 of the 24 active storm drain lines. Seven storm drain lines that convey primarily roof drainage (D, G, L, M, O, S, and V) were selected for water-only sampling. The remaining five lines (A, B, I, J and Z) had detectable concentrations of PCBs and/or metals within catch basin solids during the 2005 storm system survey, and were therefore selected for sampling of both suspended solids and water. A pump and filtration method was used to obtain suspended solids and associated water samples.
- PCBs and metals were detected above action levels⁷ in the line B suspended solids, and metals were detected above action levels in the associated water sample. PCBs were detected above action levels in the suspended solids samples from lines I, J, and Z. Valid data were not obtained for metals in suspended solids. In water samples, copper was detected above action levels in line J and Z, and zinc was detected above the action level in line J. There were no detections above source control action levels in samples from five of the seven water-only sampling locations: outfalls D, L, M, O, and S. Source control sampling is, therefore, complete for these locations. Chrysene was detected above the action level in outfall G; copper and zinc were detected above action levels in line V.
- A revised *Stormwater Source Control Work Plan* was submitted to EPA in July 2007 in anticipation of Round 2 sampling, which was scheduled to begin in October. EPA comments were received in late October, and a revised plan was submitted by Boeing in December 2007. The work plan was approved by EPA on January 15, 2008 (Boeing 2008).
- Round 2 stormwater source control sampling began in October 2007 with EPA's acknowledgement that the work lacked a final approved plan (Boeing 2008). Plans called for the collection and analysis of suspended solids samples for metals and PCBs from lines A (metals only), B, I, J, and Z during the 2007-2008 wet season; water samples were collected and analyzed for metals from lines A, B, G (SVOCs only), I, J, V, and Z (Golder Associates 2007). Field work continued through January 2008 (Boeing 2008).

Catch Basin Sampling

- Boeing has implemented a catch basin solids sampling program, integrated with the routine stormwater system cleaning and sweeping maintenance program at Plant 2 (Golder Associates 2007, Attachment E). Thirteen locations were selected for sampling of catch basin solids in May 2007, prior to the 2007 annual cleaning and inspection. Several of the sample locations contained little or no accumulated solids material (Golder Associates 2007).

⁶ This report was not available when the July 2007 LDW Source Control Status Report was published, and therefore it is discussed in the current Status Report.

⁷ Action levels are presented in the *Revised Stormwater Source Control Work Plan for Boeing Plant 2* (Golder Associates and Floyd/Snider 2007).

4.4.2 Jorgensen Forge

Current Operations	Manufacture of steel forgings and rolled aluminum rings; processing of nickel, titanium, and specialized alloys
Historical Operations	Manufacture of structural steel, tractors, and road equipment; prefabricated steel cutting and distribution
Address	8531 East Marginal Way S., Seattle 98108
Facility/Site ID	2382 (Jorgensen Forge Corp) 36575469 (Jorgensen Forge Area 3 Gasoline)
Chemicals of Concern	Metals, PCBs, petroleum hydrocarbons, non-halogenated solvents
Media Affected	Soil, groundwater

Source Control Actions

- Ecology and Jorgensen Forge Corporation negotiated an Agreed Order (No. DE 4127, effective July 12, 2007). The order requires Jorgensen Forge to evaluate existing data, identify potential ongoing sources of contaminants to sediment, and conduct additional investigations to fill identified data gaps, if necessary (Ecology 2007i).
- Jorgensen Forge submitted a *Draft Source Control Evaluation Report* on January 11, 2008 (Anchor 2008a). Ecology is currently reviewing the document (Ecology 2008a).
- Sampling of stormwater discharges at the Jorgensen property has identified four or more exceedances of Action Levels defined in their stormwater permit (SO3-003231C) since December 31, 2004. As a result, Jorgensen has initiated a Level Three Response Action to identify the source of the observed elevated concentrations of zinc and to detail actions taken, planned, and scheduled to reduce stormwater contaminant levels below the Action Levels, as technically feasible (Anchor 2008b). In a letter dated March 3, 2008, Jorgensen proposed to conduct the Level Three Response Action as part of their ongoing Source Control Investigation under the Agreed Order (Anchor 2008b). Ecology is evaluating this request.
- EPA, Jorgensen Forge Corporation, and the former owner and operator, Earle M. Jorgensen, are currently negotiation an Amended Administrative Order on Consent for preparation of an Engineering Evaluation/Cost Analysis (EE/CA) for cleanup of affected sediments along a portion of the LDW adjacent to the property.

4.5 Early Action Area 5 (Terminal 117)

EAA-5 and relevant adjacent and upland properties are shown in Figure 11. Action items for this source control area are listed in Table 8.

Location	RM 3.4-3.8 West
Chemicals of Concern	PCBs, PAHs, phenol, phthalates, DDT
Data Gaps Evaluations	Terminal 117: September 2003 (Windward 2003c) South Park Marina: June 2007 (SAIC 2007c)
SCAP	July 2005 (Ecology 2005a)

Source control actions that are area-wide (i.e., not associated with a specific adjacent or upland property) are described below.

Source Control Actions

- An Administrative Settlement Agreement and Order on Consent between EPA and the Port of Seattle and city of Seattle was signed effective September 28, 2007. As part of this agreement, the Port of Seattle and city of Seattle are conducting an EE/CA for the Terminal 117 Non-Time Critical Removal Action (Windward 2007b).

4.5.1 Terminal 117

Current Operations	Port of Seattle operations (International Inspection, Construction Services)
Historical Operations	Asphalt manufacturing; untreated lumber storage
Address	8700 Dallas Avenue S., Seattle
Facility/Site ID	37657495 (Malarkey Asphalt Company)
Chemicals of Concern	PCBs
Media Affected	Soil, groundwater, sediment

Source Control Actions

- In September 2007, the Statement of Work for the Non-Time Critical Removal Action (NTCRA) was amended by EPA, the Port of Seattle, and the city of Seattle, to expand EAA-5 (Terminal 117) to include contamination discovered in the upland soils after execution of the previous (2005) Settlement Agreement and to integrate cleanup of contamination in the street rights-of-way with the rest of the Terminal 117 EAA (EPA 2007). Three subareas were identified: the Bank and Sediments subarea, the Upland subarea, and the Adjacent Streets subarea.

Table 8
Source Control Action Items: Early Action Area 5 (Terminal 117)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
Dallas Ave S	Conduct Interim Action to clean up PCBs in street soils	High	SCAP	City of Seattle	Complete	December 2004	December 2004	Continue monitoring of stormwater and catch basin sediments
	Continue monitoring of stormwater and catch basin sediments	High	Follow-On	City of Seattle	Ongoing	TBD		
	Remove PCB-contaminated soils in residential yards at 8601 and 8609 17th Avenue S., and restore yards	High	SCAP	City of Seattle	Complete	June 2005	June 2005	
	Conduct cleanup action to remove PCB-contaminated street soils, install new storm drainage, and restore roads.	Medium	SCAP	City of Seattle	In Progress	TBD		Implement permanent stormwater control based on post-cleanup monitoring
	Implement permanent stormwater control based on monitoring results of Interim Action	Medium	Follow-On	City of Seattle	Planned	TBD		
South Park Marina	Conduct inspection at South Park Marina, including review of waste management practices and compliance with permit	Medium	SCAP	Ecology	Complete	June 2005		Conduct follow-up inspection
	Conduct follow-up inspections until compliance is achieved	Low	Follow-On	Ecology	Ongoing	TBD		
	Investigate sewer connections and discharge locations of storm drains and catch basins	Low	SCAP	Ecology	Planned	December 2005		
	Investigate location and fate of A&B Barrel waste lagoon	Medium	SCAP	Ecology	Complete	December 2005	June 2007	Conduct soil, groundwater, and bank sampling
	Conduct soil, groundwater, and bank sampling	Medium	Follow-On	Ecology, SAIC	In Progress	June 2008		
	Sample soils adjacent to fence between Terminal 117 and South Park Marina due to contamination observed in borings at Terminal 117	Medium	SCAP	Ecology	In Progress	June 2008		
	Sample catch basins for metals and phthalates	Low	SCAP	Ecology	Planned	December 2005		
Basin Oil	Monitor facility demolition and characterize soil and groundwater contamination.	Medium	SCAP	Ecology	In Progress	2008		
	Refer for Site Hazard Assessment	Medium	SCAP	Ecology	Complete	December 2005		Conduct Site Hazard Assessment
	Conduct Site Hazard Assessment	Medium	Follow-On	Ecology	Planned	TBD		
	Conduct joint EPA/Ecology compliance inspection	Medium	SCAP	Ecology, EPA	Complete	May 2005	May 2005	Re-inspect as needed to ensure compliance
	Re-inspect as needed to ensure compliance	Low	Follow-On	Ecology, SPU	Ongoing	TBD		
Boeing South Park	Conduct inspection; review drainage system and stormwater pollution prevention practices, check status of hydraulic oil recovery, and look for other potential sources	Low	SCAP	Ecology	Complete	December 2005	April 2007	

Table 8
Source Control Action Items: Early Action Area 5 (Terminal 117)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
Terminal 117	Verify institutional controls and restrictive covenants will prevent recontamination, check soil cover/barrier, discuss further assessment of subsurface contamination at Malarkey plant	Medium	SCAP	Port of Seattle, Ecology	Complete	June 2006	September 2007	Amendment to the scope of work requires more extensive removal of contamination. The basis for this has changed and is no longer applicable.
	Conduct a time-critical removal action to remove additional PCB-contaminated soil in the upland portion of Terminal 117	Medium	New	Port of Seattle	Complete	--	2006	
	Check soil cover/barrier across site for industrial use based on suspected residual subsurface contamination	Medium	SCAP	Port of Seattle, Ecology	Complete	June 2006	September 2007	Amendment to the scope of work requires more extensive removal of contamination. The basis for this has changed and is no longer applicable.
	Continue discussions between the Port, the city of Seattle, EPA, and Ecology regarding how to further address the potential presence of subsurface contamination in portions of the site formerly occupied by the Malarkey plant	High	SCAP	Port of Seattle, Ecology, city of Seattle, EPA	In Progress	Summer 2008		
	Revise the July 2005 EE/CA to incorporate all relevant upland and right-of-way data	High	New	Port of Seattle, city of Seattle, EPA	In Progress	2008		
	Install and sample additional groundwater monitoring wells	High	New	Port of Seattle	In Progress	2008		
	Inspect current tenants in coordination with the Port of Seattle to determine if they are potential sources of recontamination	Low	SCAP	Port of Seattle, Ecology	Complete	June 2006	February 2007	The South Building tenant vacated on February 28, 2007
	Discuss condition and maintenance of onsite septic system with the Port	Low	SCAP	Port of Seattle, Ecology	Complete	June 2006	February 2007	The South Building tenant vacated on February 28, 2007
	Complete needed assessments of portions of the site formerly occupied by the Malarkey plant	High	Follow-On	Port of Seattle	In Progress	2008		

Priority:

	High = High priority action item -- to be completed prior to sediment cleanup
	Medium = Medium priority action item -- to be completed prior to or concurrent with sediment cleanup
	Low = Low priority action -- ongoing actions, or actions to be completed as resources become available
	Completed action item

Type:

SCAP	Action item identified in the EAA-5 SCAP
Follow-On	Action item is a follow-on to an action item identified in the EAA-5 SCAP
New	Action item identified after publication of the EAA-5 SCAP

- Under the amended Statement of Work, Port of Seattle and city of Seattle will amend the EE/CA, prepared in July 2005, to include new Upland data, all relevant Adjacent Streets data, data collected by EPA in a 2007 sampling event at Basin Oil, and a recontamination assessment of the Basin Oil and South Park Marina properties. Following completion of the EE/CA, EPA will issue an Amended Action Memorandum for the Terminal 117 EAA NTCRA, which will replace the Action Memorandum issued in July 2005 (EPA 2007).
- A draft EE/CA Work Plan was submitted to EPA on December 31, 2007. EPA comments on the draft Work Plan were submitted on February 1, 2008. The final EE/CA Work Plan was scheduled to be submitted to EPA on March 13, 2008. Preparation of the draft EE/CA will begin as soon as the Work Plan is finalized.
- A data gaps analysis for the Bank/Sediments, Upland, and Adjacent Streets subareas was completed in January 2008. No data gaps were identified; the current range of data for the EAA subareas were determined to be sufficient for preparation of the EE/CA (Windward 2008b).
- Groundwater monitoring wells were installed on February 27-28, 2008. The first groundwater sampling event was scheduled for early March.

4.5.2 Basin Oil

Current Operations	Container (drum) storage
Historical Operations	Asphalt production; collection, transport, and marketing of used oil
Address	8661 Dallas Ave. S. and 8617 17 th Ave. S., Seattle 98108
Facility/Site ID	83476734 (Basin Oil Co Dallas Ave) 8901731 (Basin Oil Drum Storage 17 th Ave S)
Chemicals of Concern	PCBs, petroleum hydrocarbons
Media Affected	Soil, groundwater, stormwater, sediment

Source Control Actions

- Hazardous waste compliance inspections were conducted at this property by Ecology on May 24, 2007, June 28, 2007, and August 15, 2007 (Ecology 2007c). Violations from previous inspections have not been resolved (Ecology 2007c).
- During excavation of petroleum-contaminated soils by the property owner in September, short sections of creosote-coated poles were discovered. In addition, a wood structure was exposed approximately 1 to 2 feet below grade (Fujita 2007).
- The property owner continues to make progress with drum removal and site cleanup. As of November 7, 2007, an estimated 150 drums remained at the main drum stack location, down from the previous estimate of 250 (Fujita 2007). By March 2008, all of the drums had been removed (Ecology 2008d).
- A groundwater monitoring well located on the southeast corner of the Basin Oil site was redeveloped in February 2008; the Port of Seattle plans to maintain and sample this well (Fujita 2008). Results were not available at the time this Status Report was prepared.

4.5.3 South Park Marina

Current Operations	Marina operations (moorage, support facilities, boat maintenance and repair)
Historical Operations	Barrel reconditioning and painting; boat building; mobile home park
Address	8604 Dallas Ave. S., Seattle 98108
Facility/Site ID	44653368 (South Park Marina)
Chemicals of Concern	Metals, PAHs, phthalates, PCBs, pesticides, petroleum hydrocarbons, VOCs
Media Affected	Soil, groundwater

Source Control Actions

- Ecology's contractor (SAIC) prepared a *Summary of Existing Information and Identification of Data Gaps* report for South Park Marina to determine the precise location of the old A&B Barrel waste lagoon and to evaluate the potential for sediment recontamination associated with historical and current operations at the site (SAIC 2007c). In addition, SAIC prepared a *Site Reconnaissance Plan* to provide recommendations on soil and bank sampling (SAIC 2007f).
- Ecology's contractor (SAIC) conducted a site reconnaissance investigation to determine if South Park Marina has been affected by contamination from Terminal 117. SAIC prepared summary tables of validated data that compare analyte concentrations to regulatory criteria. Metals, PCBs, pesticides, SVOCs, TPH, and VOCs exceeded MTCA cleanup levels or soil-to-sediment screening levels. Metals, pesticides and VOCs exceeded MTCA cleanup levels for groundwater. SAIC is preparing a data report.
- Collection of intertidal sediment samples was delayed until March because of unfavorable tidal conditions. Another round of groundwater sampling and testing was conducted concurrent with the intertidal sediment sampling in March 2008 (Ecology 2008a). SAIC is preparing a data report.

4.6 Early Action Area 6 (Boeing Isaacson/Central KCIA)

EAA-6 and relevant adjacent and upland properties are shown in Figure 12. The SCAP has not yet been prepared for this source control area, and therefore action items have not been identified at this time.

Location	RM 3.7-3.9 East
Chemicals of Concern	Arsenic, PAHs, phthalates, PCBs, benzoic acid, benzyl alcohol, dibenzofuran
Data Gaps Evaluation	In Progress
SCAP	In Progress

Source control actions that are area-wide (i.e., not associated with a specific adjacent or upland property) are described below.

Source Control Actions

- A draft *Summary of Existing Information and Identification of Data Gaps* report was submitted to Ecology by SAIC in February 2008.
- A SCAP for this early action area will be prepared after the Data Gaps report has been finalized; it is scheduled for completion in September 2008.

4.6.1 Boeing Isaacson/Thompson Property

Current Operations	Vacant
Historical Operations	Sawmill, galvanizing plant, wood treating, steel fabrication, office and manufacturing space; aircraft assembly
Address	8541-8811 East Marginal Way S.
Facility/Site ID	1138721 (Boeing Isaacson Property) 2218 (Boeing Isaacson Thompson) 83767996 (Boeing Thompson) 4274402 (Boeing Thompson Site)
Chemicals of Concern	Arsenic and potentially other metals
Media Affected	Soil, groundwater, sediment

Source Control Actions

- Groundwater samples were collected from wells I-205 and I-206 (on the Thompson property) by Boeing in March and August 2006, and again in September 2007. Split samples were collected by Paccar in 2006. Results indicated arsenic concentrations of 9.8 to 28 ug/L in I-205 and 213 to 720 ug/L in I-206 (Ecology 2007a; Hartley 2008). For comparison, the MTCA Method A cleanup level for arsenic in groundwater is 5 ug/L (based on Washington state background levels), and the marine chronic water quality criterion is 36 ug/L.
- As of December 31, 2007, Boeing has relocated all industrial/manufacturing activities from the Boeing Thompson site to other Boeing facilities, primarily the aircraft final assembly locations in Renton and Everett.

4.7 Early Action Area 7 (Norfolk CSO/SD)

EAA-7 and relevant adjacent and upland properties are shown in Figure 13. Action items for this source control area are listed in Table 9.

Location	RM 4.9 East
Chemicals of Concern	PCBs, PAHs, phthalates, hexachlorobenzene, metals
Data Gaps Evaluation	September 2007 (E&E 2007b)
SCAP	September 2007 (Ecology 2007e)

Table 9
Source Control Action Items: Early Action Area 7 (Norfolk CSO/SD)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
Norfolk CSO/SD	Compile available GIS data to gain a better understanding of the configurations, relationships, and interconnections of the various stormwater systems; conduct dye testing if needed	Medium	SCAP	SPU, city of Tukwila, King County	Planned	TBD		
	Obtain drainage plans for private properties along East Marginal Way S. to better delineate drainage basin boundaries in this area	Low	SCAP	SPU, city of Tukwila, King County	Planned	TBD		
	Conduct further source tracing and sampling within the Norfolk CSO/SD	Medium	SCAP	Ecology, property owners	Planned	TBD		
Boeing Developmental Center (BDC)	Continue sediment monitoring in the vicinity of the south storm drain sediment removal activities	High	SCAP	Boeing	In Progress	TBD		
	Determine the source of PCBs in storm drain solids and conduct source control activities to remove PCBs from the system	High	SCAP	Boeing	Planned	TBD		
	Continue monitoring storm drain solids	High	SCAP	Boeing	In Progress	TBD		
	Determine cleanup of PCB-containing caulk and other building materials	Medium	SCAP	Ecology, Boeing	Planned	TBD		
	Re-evaluate SWPPP to determine whether process/operational changes have been made at the BDC, and modify as necessary to address new conditions	Low	SCAP	Ecology, Boeing	Planned	TBD		
	Re-evaluate the Industrial Stormwater General Permit to assure that the appropriate parameters are measured to assess ongoing sources	Low	SCAP	Ecology, Boeing	Planned	TBD		
	Determine whether groundwater and soil sampling are needed at Parcel 0423049016 to assess possible historic contamination	Medium	SCAP	Ecology, Boeing	Planned	TBD		
Military Flight Center (MFC)	Conduct testing to assess the effectiveness of removal of PCB-contaminated material; provide caulk removal and testing reports to Ecology	Medium	SCAP	Boeing	Planned	TBD		
	Re-evaluate the SWPPP and NPDES permit and make any necessary changes, including parameters to address potential ongoing sources	Low	SCAP	Ecology, Boeing	Planned	TBD		
	Conduct inspection to ensure that pollutant prevention practices are adequate and the facility is in compliance with its stormwater permit	Low	SCAP	Ecology	Planned	TBD		
	Monitor stormwater for PCBs at discharge points to assess potential ongoing sources	Medium	SCAP	Boeing	Planned	TBD		
	Discuss cleanup options for removal of caulk containing PCBs at less than 50 mg/kg	Medium	SCAP	Ecology, Boeing	Planned	TBD		
KCIA	Determine where the KCIA storm drain system connects to the Norfolk CSO/SD	Low	SCAP	KCIA	Planned	TBD		
	Test and remove any material, if needed, in the southern portion of KCIA that contains elevated levels of PCBs (e.g., caulk containing PCBs)	Medium	SCAP	KCIA	Planned	TBD		

Table 9
Source Control Action Items: Early Action Area 7 (Norfolk CSO/SD)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
	Re-evaluate the SWPPP and make any necessary changes to address ongoing sources	Low	SCAP	Ecology, KCIA	Planned	TBD		
Associated Grocers	Sample monitoring wells located near the former truck shop to evaluate current groundwater flow and extent of the contaminant plume; determine if additional monitoring wells are needed	Medium	SCAP	Property owner	Planned	TBD		
	Re-evaluate the free product removal strategy to determine its source control effectiveness	Medium	SCAP	Property owner	Planned	TBD		
	Determine whether additional groundwater and soil assessment is needed for the maintenance building where UST removal activities took place in 1995	Medium	SCAP	Ecology	Planned	TBD		
	Apprise the city of Seattle Department of Planning & Development of the potential for new construction or redevelopment activities to encounter contaminated soil or groundwater, so that this can be addressed in the project construction dewatering plan	Low	SCAP	SPU	Planned	TBD		
	Evaluate spill prevention/cleanup plan for the two operational USTs to assure adequate control of potential spills	Low	SCAP	Ecology, Property owner	Planned	TBD		
	Continue to conduct business inspections at the facility to ensure compliance	Low	SCAP	SPU	Ongoing	TBD		
	Determine whether a SWPPP is required to address potential ongoing sources	Low	SCAP	Ecology	Planned	TBD		
Northwest Auto Wrecking	Conduct soil, groundwater, surface water, and sediment sampling, as appropriate, to evaluate potential historic sources	Medium	SCAP	Northwest Auto Wrecking	Planned	TBD		Review sampling results and assess potential for sediment recontamination
	Review results of soil, groundwater, surface water, and/or sediment sampling to assess potential for sediment recontamination	Medium	SCAP	Ecology	Planned	TBD		
	Conduct facility inspection to assess potential ongoing sources	Low	SCAP	SPU	Planned	2007		
	Determine whether a NPDES permit and SWPPP are required	Low	SCAP	Ecology	Planned	TBD		
	Obtain information pertaining to the storm drain system from Northwest Auto Wrecking to assess potential historic and ongoing sources	Low	SCAP	Ecology	Planned	TBD		
	Determine whether the storm drain system connects to the Norfolk CSO/SD	Medium	SCAP	Northwest Auto Wrecking	Planned	TBD		
Affordable Auto Wrecking	Conduct surface water, soil, and groundwater sampling to assess the potential for sediment recontamination	Medium	SCAP	Affordable Auto Wrecking	Planned	TBD		
	Determine whether the storm drain system connects to the Norfolk CSO/SD	Medium	SCAP	Affordable Auto Wrecking, SPU, city of Tukwila	Planned	TBD		

Table 9
Source Control Action Items: Early Action Area 7 (Norfolk CSO/SD)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
	Inspect facility to ensure that recent drainage system modifications are functioning properly and that contaminated runoff does not flow into the municipal storm drain system on MLK Way	Medium	SCAP	Ecology, SPU, KCIW	Planned	TBD		
	Determine cleanup options for removal of historically-contaminated media, as appropriate	Medium	SCAP	Ecology, Affordable Auto Wrecking	Planned	TBD		
	Re-evaluate the SWPPP and make necessary changes to address potential ongoing sources	Low	SCAP	Ecology, Affordable Auto Wrecking	Planned	TBD		
	Oversee and monitor discharges to the combined sewer system	Medium	SCAP	KCIW	Planned	TBD		
Arco Gas Station	Conduct soil sampling in the area adjacent to the former tank farm under the Voluntary Cleanup Program, to determine if soils are impacted and if remediation is necessary to control this potential contaminant pathway	Medium	SCAP	Arco	Planned	TBD		
	Conduct additional groundwater monitoring	Medium	SCAP	Arco	Planned	TBD		
	Based on results of soil and groundwater sampling, determine whether further actions are needed to address potential historical sources	Medium	SCAP	Ecology	Planned	TBD		
	Determine if a SWPPP is required to address potential ongoing sources	Low	SCAP	Ecology	Planned	TBD		
	Gain a better understanding of the storm drain system and possible historic or present connections to the Norfolk CSO/SD	Low	SCAP	Ecology	Planned	TBD		

Priority:

	High = High priority action item -- to be completed prior to sediment cleanup
	Medium = Medium priority action item -- to be completed prior to or concurrent with sediment cleanup
	Low = Low priority action -- ongoing actions, or actions to be completed as resources become available
	Completed action item

Type:

SCAP	Action item identified in the EAA-2 SCAP
Follow-On	Action item is a follow-on to an action item identified in the EAA-2 SCAP
New	Action item identified after publication of the EAA-2 SCAP

Source control actions that are area-wide (i.e., not associated with a specific adjacent or upland property) are described below.

- A final *Summary of Existing Information and Identification of Data Gaps Report* was submitted to Ecology by E&E in September 2007 (E&E 2007b).
- A SCAP was completed in September 2007. Potential sources of sediment recontamination identified in the SCAP include: the Norfolk CSO/EOF/SD; storm drainage from the Boeing Developmental Center; PCB sources at the Boeing Military Flight Center; stormwater from the southern portion of KCIA; and groundwater and/or soil contamination at upland properties including Associated Grocers, Northwest Auto Wrecking, Affordable Auto Wrecking, and an Arco gas station.
- In 2007, SPU inspected five businesses in the Tukwila portion of the Norfolk basin under a Memorandum of Agreement with Tukwila, including Northwest Auto Wrecking (which is no longer in operation).
- In 2007, SPU installed sediment traps at five locations in the Norfolk CSO/EOF/SD system. Sampling locations and results were unavailable at the time this Status Report was prepared.

4.7.1 Boeing Developmental Center (BDC)

Current Operations	Research and development
Historical Operations	Aircraft manufacturing
Address	9725 East Marginal Way S., Tukwila 98108
Facility/Site ID	4581384 (Boeing Development Center Norfolk) 2101 (Boeing A&M Developmental Center)
Chemicals of Concern	PCBs, metals, solvents, petroleum hydrocarbons, SVOCs
Media Affected	Soil, groundwater, stormwater, sediment

Source Control Actions

- In July 2007, Boeing's contractor (Calibre Systems) published the *2006 Annual Sampling Report, South Storm Drain System, Boeing Developmental Center* (Calibre 2007). This report documents the post-removal monitoring conducted near the location of the 2003 sediment removal action at the Developmental Center south storm drain line outfall. Storm drain solids were collected in September 2006 using passive filter bags. PCB concentrations ranged from 5.9 to 38 mg/kg DW. Samples collected in June 2007 from the backfill material installed during the September 2003 sediment removal near the south storm drain outfall contained PCBs at concentrations ranging from <0.02 to 0.28 mg/kg DW (to 16 mg/kg OC).
- The next annual sampling round of backfill material and storm drain solids near the south storm drain system was scheduled to be conducted in fall 2007. No sampling report had been published at the time this Status Report was prepared.

5.0 Source Control Activities: Tier 2 and Tier 3 Areas

Additional source control areas where long-term sediment cleanup actions may be implemented as part of the EPA ROD for the LDW Superfund Site are identified as Tier 2 Areas. At Tier 3 Areas, source control is necessary to prevent future sediment contamination from basins that may not drain directly to an identified sediment cleanup area.

As discussed in Section 2.1, the designation as a Tier 2 or Tier 3 source control area depends on whether or not it needs cleanup. Since the RI is still being developed and the ROD will not be published until 2010, there is currently no way to distinguish between Tier 2 and Tier 3 areas. This section discusses the 16 potential Tier 2 or Tier 3 source control areas.

Ecology will conduct source control evaluations for each of these areas, including review of existing information, identification of data gaps, and preparation of a SCAP. The 16 Tier 2 and Tier 3 areas and the seven EAAs (a total of 23 source control areas) are shown on Figure 2.

Site maps are presented in Figures 14 and 15 for those source control areas with completed Data Gaps reports; these maps are intended to help identify locations discussed in the text below. Additional figures are available in the referenced reports.

5.1 RM 0.0-0.1 East (Spokane St. to Ash Grove Cement)

- Preparation of a *Summary of Existing Information and Identification of Data Gaps* report is in progress. A SCAP will be developed after completion of the Data Gaps report.

5.2 RM 0.9-1.0 East (Slip 1)

- Preparation of a *Summary of Existing Information and Identification of Data Gaps* report is in progress. A SCAP will be developed after completion of the Data Gaps report.

5.3 RM 1.0-1.4 East (King County Lease Parcels)

No source identification or control activities have been conducted to date.

5.4 RM 1.4-1.7 East (St. Gobain to Glacier Northwest)

- Preparation of a *Summary of Existing Information and Identification of Data Gaps* report is in progress. A SCAP will be developed after completion of the Data Gaps report.

5.5 RM 1.7-2.0 East (Slip 2 to Slip 3)

- Preparation of a *Summary of Existing Information and Identification of Data Gaps* report is in progress. A SCAP will be developed after completion of the Data Gaps report.

5.6 RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)

- Preparation of a *Summary of Existing Information and Identification of Data Gaps* report is in progress; a draft report was submitted in to Ecology on January 30, 2008. A SCAP will be developed after completion of the Data Gaps report.

5.7 RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)

- Preparation of a *Summary of Existing Information and Identification of Data Gaps* report is in progress; a draft report was submitted to Ecology on March 10. A SCAP will be developed after completion of the Data Gaps report.

5.8 RM 3.9-4.4 East (Slip 6)

RM 3.9-4.4 East (Slip 6) and relevant adjacent and upland properties are shown in Figure 14. The SCAP has not yet been prepared for this source control area, and therefore action items have not been identified at this time.

Location	RM 3.9-4.4 East
Chemicals of Concern	Metals, PCBs, PAHs, phthalates, VOCs, petroleum hydrocarbons
Data Gaps Evaluation	March 2008 (E&E 2008)
SCAP	In Progress

Source control actions that are area-wide (i.e., not associated with a specific adjacent or upland property) are described below.

Source Control Actions

- A *Summary of Existing Information and Identification of Data Gaps* report was completed in February 2008 (E&E 2008). Preparation of the SCAP is currently in progress.

5.8.1 Kenworth Truck/PACCAR

Current Operations	Damaged vehicle storage
Historical Operations	Truck manufacturing; airplane assembly
Address	8801 East Marginal Way S., Tukwila
Facility/Site ID	2072 (Kenworth Truck Co)
Chemicals of Concern	Petroleum hydrocarbons, PAHs, VOCs, PCBs, metals (arsenic, lead, copper), SVOCs
Media Affected	Soil, groundwater, stormwater, sediment

Source Control Actions

- In compliance with an Agreed Order between Ecology and PACCAR, PACCAR conducted stormwater and stormwater solids sampling in October 2006 and March 2007. A memorandum summarizing results was submitted to Ecology in late June 2007 (Anchor 2007). Dissolved copper exceeded the marine chronic water quality criteria. In stormwater solids, matrix interference issues resulted in high detection limits for PAHs. Cadmium, lead, mercury, silver, PCBs, PAHs, phthalates, 4-methylphenol, benzyl alcohol, and benzoic acid exceeded the SMS (Anchor 2007).
- Ecology issued letters to PACCAR and Merrill Creek Holdings LLC on January 24, 2008 notifying them of their potential liability under MTCA for the release of hazardous substances at the former PACCAR site. Ecology also issued “No Determination” letters to Insurance Auto Auctions Inc. (IAA) and Washington Holdings LLC on February 5, 2008.
- Ecology drafted an Agreed Order for the upland cleanup actions which include completion of Remedial Investigation, a Feasibility Study, a sediment report, and a Cleanup Action or Interim Action Plan (Ecology 2008).
- IAA, the current operator of the property, completed the installation and testing for new NPDES stormwater improvements. The system began operations on February 14, 2008. IAA expects these improvements to be a significant benefit to source control in removing suspended solids and metals with the new treatment system. Currently, IAA is monitoring six parameters quarterly. Ecology and IAA have been discussing an expanded Stormwater Sampling and Analysis Plan for the new system. The expanded monitoring is expected to begin this quarter and include stormwater and solids for four quarters for all chemicals of concern at the site (Ecology 2008).
- The Phase 2 sediment sampling was completed in February 2008. Field work was successful and 6- to 9-foot cores were retrieved. Laboratory analysis is underway with results expected in mid-May and the report expected in August 2008 (Ecology 2008).
- PACCAR completed its analysis of potential chemicals of concern using Ecology LDW screening criteria and fate and transport modeling for the uplands. PACCAR presented their view of the extent of known contamination in the upland soils and groundwater and a list of chemicals of concern and areas of concern. Supplemental investigation will be required at five locations across the 25-acre upland site. PACCAR is preparing a plan for the five locations. One feasible alternative being evaluated is the use of Biochlor modeling for the halogenated VOC plume that exists in the shallow groundwater (Ecology 2008).

5.8.2 Rhone-Poulenc

Current Operations	Damaged vehicle storage; Museum of Flight
Historical Operations	Manufacturing and processing of industrial chemicals
Address	9229 East Marginal Way S., Tukwila 98108
Facility/Site ID	2150 (Container Properties LLC)
Chemicals of Concern	Metals (arsenic, cadmium, copper), toluene, mineral oil, corrosive wastes
Media Affected	Soil, groundwater

Source Control Actions

- EPA is overseeing a RCRA Corrective Action cleanup under a 1993 consent order at this facility. The former Rhone-Poulenc property has been divided into East and West parcels. The East parcel has been significantly remediated and developed; Ecology has issued a partial determination of “Corrective Action Complete Without Controls” for the East parcel.

5.9 RM 4.4-4.8 East (Boeing Developmental Center)

No source identification or control activities have been conducted to date.

5.10 RM 0-1.0 West (Spokane St. to Kellogg Island)

No source identification or control activities have been conducted to date.

5.11 RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)

No source identification or control activities have been conducted to date.

5.12 RM 1.3-1.6 West (Glacier Bay)

RM 1.3-1.6 West (Glacier Bay) and relevant adjacent and upland properties are shown in Figure 15. Action items for this source control area are listed in Table 10.

Location	RM 1.3-1.6 West
Chemicals of Concern	Metals (arsenic, mercury, zinc, copper, lead, antimony, tin), dioxins/furans, PCBs, phthalates, PAHs, 1,2-dichlorobenzene, pentachlorophenol, benzyl alcohol, organo-tin compounds
Data Gaps Evaluation	June 2007 (SAIC 2007a)
SCAP	December 2007 (Ecology 2007f)

Source control actions that are area-wide (i.e., not associated with a specific adjacent or upland property) are described below.

Table 10
Source Control Action Items: RM 1.3-1.6 West (Glacier Bay)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
Glacier Bay Outfall	Collect inline sediment samples to evaluate whether contaminants are currently being transported to Glacier Bay via this pathway	Medium	SCAP	SPU	Planned	2007/2008		If COCs are present, conduct source tracing as needed.
	If COCs are present in the storm drain line, conduct source tracing to identify sources of contaminants	Medium	SCAP	SPU	Planned	2008		
Alaska Marine Lines	Sample groundwater along shoreline to determine whether residual site contaminants are being discharged to Glacier Bay.	Medium	SCAP	Alaska Marine Lines	Planned	2008		
	Confirm location of former USTs that were removed in 1990	Low	SCAP	Alaska Marine Lines	Planned	2007		
	Conduct follow-up inspection to ensure that concerns and recommendations from the January 2006 inspection have been addressed	Low	SCAP	Ecology	Planned	2007		
	Verify that remediation associated with filling of graving dock was completed and all conditions met	Low	SCAP	Ecology	Planned	2008		
	Oversee and inspect site through Industrial Waste program	Low	SCAP	KCIW	Ongoing			
	Continue periodic inspections as needed to ensure compliance with the facility's NPDES permit	Low	SCAP	Ecology	Ongoing			
Duwamish Shipyard	Negotiate an Agreed Order to address soil and groundwater contamination	High	SCAP	Ecology, Duwamish Shipyard	In Progress	2008		
	Clean out stormwater catch basins and lines, sample solids, and report results; clean and prepare videodocumentation of stormwater system	High	SCAP	Duwamish Shipyard	Complete	November 2007	January 2008	
	Evaluate results of test pit and soil stock pile testing	Low	New	Duwamish Shipyard	Complete	—	January 2008	None needed; no exceedances of MTCA
	Prepare work plans for further site investigations as specified in the Agreed Order	High	SCAP	Duwamish Shipyard	Planned	2007		
	Conduct site investigations as specified in the Agreed Order Statement of Work	High	SCAP	Duwamish Shipyard	Planned	2007/2008		
	Review site investigation results and assess potential for sediment recontamination and need for remedial actions	High	SCAP	Ecology	Planned	2008/2009		
	Continue to oversee and inspect this site through Industrial Waste Program	Low	SCAP	KCIW	Ongoing			
	Continue periodic inspections as needed to ensure compliance with the facility's NPDES permit	Low	SCAP	Ecology	Ongoing			
Glacier Northwest	Direct current and/or previous property owners/operators to conduct site characterization investigations	High	SCAP	Ecology	In Progress	Summer 2008		
	Prepare work plans for site investigations as specified by Ecology	High	SCAP	Property owner/operator	Planned	2007		

Table 10
Source Control Action Items: RM 1.3-1.6 West (Glacier Bay)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
	Upon approval of work plans by Ecology, conduct site investigations as specified	High	SCAP	Property owner/operator	Planned	2007/2008		
	Review site investigation results and assess potential for sediment recontamination and need for remedial actions	High	SCAP	Ecology	Planned	2008/2009		
	Conduct a site inspection to evaluate current operations with respect to stormwater and waste management	Low	SCAP	Ecology, SPU	Planned	2007		
	Verify the storm drainage pathway at the site; if stormwater flow to the LDW is confirmed, assess the need for stormwater characterization	Medium	SCAP	SPU, Ecology	Planned	2007		
	Conduct periodic source control inspections as needed to verify that current operations do not result in release of contaminants to the LDW	Low	SCAP	SPU, Ecology	Ongoing			
	Issue CERCLA 104(e) request to the facility and property owners to obtain additional information on current and historical operations	Low	New	EPA	Complete	--	2008	
	Review CERCLA 104(e) response	Medium	Follow-up	EPA, Ecology	In Progress	2008		
Former MRI Corporation	Pursue further investigation of the potential for groundwater transport of contaminants to Glacier Bay or to storm drain lines which discharge to Glacier Bay; review results and determine whether remedial action is required	Medium	SCAP	Ecology	Planned	2008		
	Conduct a site inspection to evaluate current operations with respect to stormwater and waste management	Medium	SCAP	Ecology, SPU	Planned	2007		
	Verify the storm drainage pathway at the site; if stormwater flow to the LDW is confirmed, assess the need for stormwater characterization	Medium	SCAP	SPU, Ecology	Planned	2007		
	Conduct periodic source control inspections as needed	Low	SCAP	SPU, Ecology	Ongoing			
Chemithon	Prepare and/or update the SWPPP and processes to ensure that site activities do not result in transport of contaminants to the LDW	Low	SCAP	Chemithon	Planned	2007		
	Conduct follow-up inspections and sampling as needed	Medium	SCAP	Ecology, SPU	Ongoing	2007/2008		

Table 10
Source Control Action Items: RM 1.3-1.6 West (Glacier Bay)

Source Control Facility or Outfall	Action Item	Priority	Type	Responsible Party	Status	Estimated Completion Date	Date Completed	Follow-On Actions
Upland Properties	Conduct source control inspections of upland properties as needed	Medium	SCAP	SPU, Ecology	Ongoing	2007/2008		
	Review and update NPDES permits as needed	Low	SCAP	Ecology-WQ	Ongoing			

Priority:

	High = High priority action item -- to be completed prior to sediment cleanup
	Medium = Medium priority action item -- to be completed prior to or concurrent with sediment cleanup
	Low = Low priority action -- ongoing actions, or actions to be completed as resources become available
	Completed action item

Type:

SCAP	Action item identified in the Glacier Bay SCAP
Follow-On	Action item is a follow-on to an action item identified in the Glacier Bay SCAP
New	Action item identified after publication of the Glacier Bay SCAP

Source Control Actions

- SAIC completed a *Summary of Existing Information and Identification of Data Gaps* report in June 2007 (SAIC 2007a). The following chemicals are considered to be COCs at Glacier Bay with regard to potential sediment recontamination: arsenic, mercury, zinc, copper, lead, antimony, tin, dioxins/furans, PCBs, phthalates, PAHs, 1,2-dichlorobenzene, pentachlorophenol, and benzyl alcohol.
- Ecology published a SCAP in December 2007 (Ecology 2007f).
- SPU conducted one follow-up inspection in the Glacier Bay area in 2007. The remaining businesses in this area were inspected in 2006.

5.12.1 Duwamish Shipyard

Current Operations	Equipment and container storage
Historical Operations	Repair and maintenance of floating vessels and equipment
Address	5658 West Marginal Way SW, Seattle 98106
Facility/Site ID	2071 (Duwamish Shipyard Inc)
Chemicals of Concern	Metals (arsenic, lead, mercury, cadmium, copper, zinc), PAHs, VOCs, petroleum hydrocarbons, phthalates, PCBs
Media Affected	Soil, groundwater, stormwater

Source Control Actions

- Duwamish Shipyard conducted cleanout and sampling of catch basins and lines in July/August 2007. Testing of the catch basins was conducted as part of the preliminary data report, with the exception of tributyltin (TBT). Ecology requested that Duwamish Shipyard test for TBT in the outfall manhole prior to cleaning the stormwater system; TBT was detected at 0.74 mg/kg. After sampling and testing, Duwamish Shipyard cleaned out and performed video documentation of the stormwater system (Anchor 2008c).
- Ecology submitted a Draft Agreed Order to Duwamish Shipyard on November 28, 2007 (Ecology 2007h).
- A draft Public Participation Plan and Fact Sheet were submitted for review to Duwamish Shipyard on December 31, 2007. They provided comments on these documents and the draft Agreed Order on February 28, 2008 (Edens 2008b). They also submitted a draft RI/FS Work Plan for Ecology review on this date, which is currently being reviewed by Ecology.
- In January 2008, Duwamish Shipyard submitted updated information on soil management results for test pit sample reanalysis and soil stock pile testing (Anchor 2008d). Initial testing of soils stockpiled from previous investigations indicated that cadmium concentrations exceeded MTCA cleanup levels. Subsequent review of the laboratory reports suggested that the cadmium detections may not be valid. The soil

stockpiles were resampled and tested and there were no exceedance of MTCA cleanup levels.

- Ecology staff visited the site on February 12, 2008 to prepare for review of the RI/FS Work Plan (Ecology 2008).

5.12.2 Glacier Northwest, Inc.

Current Operations	Cement terminal
Historical Operations	Lumber mill, chemical manufacturing, cement production
Address	5900-5902 West Marginal Way SW, Seattle 98106
Facility/Site ID	23881883 (Glacier Northwest Seattle Terminal) 67234947 (Glacier Northwest Marginal Way Truck Shop)
Chemicals of Concern	Metals (arsenic, zinc), phthalates, PCBs, dioxins/furans, chlorophenols
Media Affected	Soil, groundwater

Source Control Actions

- Ecology has sent preliminary PLP letters to Glacier Northwest, Inc., Reichhold, Inc. and the U.S. Army. The 30-day comment period ends April 5, 2008.

5.12.3 Chemithon Corporation

Current Operations	Chemical process equipment manufacturing; research pilot plant
Historical Operations	No information
Address	5430 West Marginal Way SW, Seattle 98108
Facility/Site ID	41953656 (Chemithon Corp)
Chemicals of Concern	Metals (arsenic, lead, mercury, zinc, copper), PAHs, phthalates, methylphenols, PCBs
Media Affected	Stormwater

Source Control Actions

- In 2006, SPU detected elevated concentrations of PCBs (2.5 mg/kg DW) in a catch basin, in the northeastern portion of the property, that drains to the LDW. Subsequent source tracing in 2006/2007 determined that the PCBs were associated with paint residue found in the onsite storm drain system. Chemithon jetted the lines and cleaned the catch basins to remove the paint material in 2007.
- Also in 2007, Chemithon disconnected the catch basins in the parking area and non-process areas in the southwestern portion of the property from the combined sewer system on West Marginal Way SW to the separated storm drain system. These areas now drain to the LDW via an existing outfall located in the southeast corner of the property.
- In June 2007, King County Industrial Waste staff collected samples from the stormwater sump located in the southeast corner of the property. Samples were analyzed for PCBs

and metals. While at the site, King County personnel noted foaming in the stormwater sump, and a pH of 10.0 was measured. PCBs were detected at 0.46 ug/L (Tiffany 2007).

- Chemithon followed up on this observation and determined that the machine shop sump was out of adjustment or malfunctioned, resulting in overflow of some pilot plant wastewater into the stormwater system. Appropriate adjustments were made to prevent a recurrence (Tiffany 2007).
- During an October 17, 2007 Ecology site visit to Lafarge Corporation, which is located adjacent to Chemithon, a sandblast grit pile was observed along the fence line near the Chemithon catch basin. Ecology had previously expressed concerns about the potential for dust and overspill to affect the catch basin. Lafarge indicated that they would move the pile, however as of March 2008 this had apparently not been done (Ortiz 2007).

5.13 RM 1.6-2.1 West (Terminal 115)

No source identification or control activities have been conducted to date.

5.14 RM 2.2-3.4 West (Water World)

No source identification or control activities have been conducted to date.

5.15 RM 3.8-4.2 West (Sea King Industrial Park)

No source identification or control activities have been conducted to date.

5.16 RM 4.2-4.8 West (Restoration Areas)

No source identification or control activities have been conducted to date.

6.0 References

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- Anchor. 2008b. Letter from Ryan Barth, Anchor Environmental, LLC, to Elaine Worthen, Industrial Stormwater Permit Coordinator, Washington State Department of Ecology, RE: Jorgensen Forge Corporation, NPDES Permit Level Three Response Action Incorporation into Ecology Agreed Order Process. March 3, 2008. [3187]
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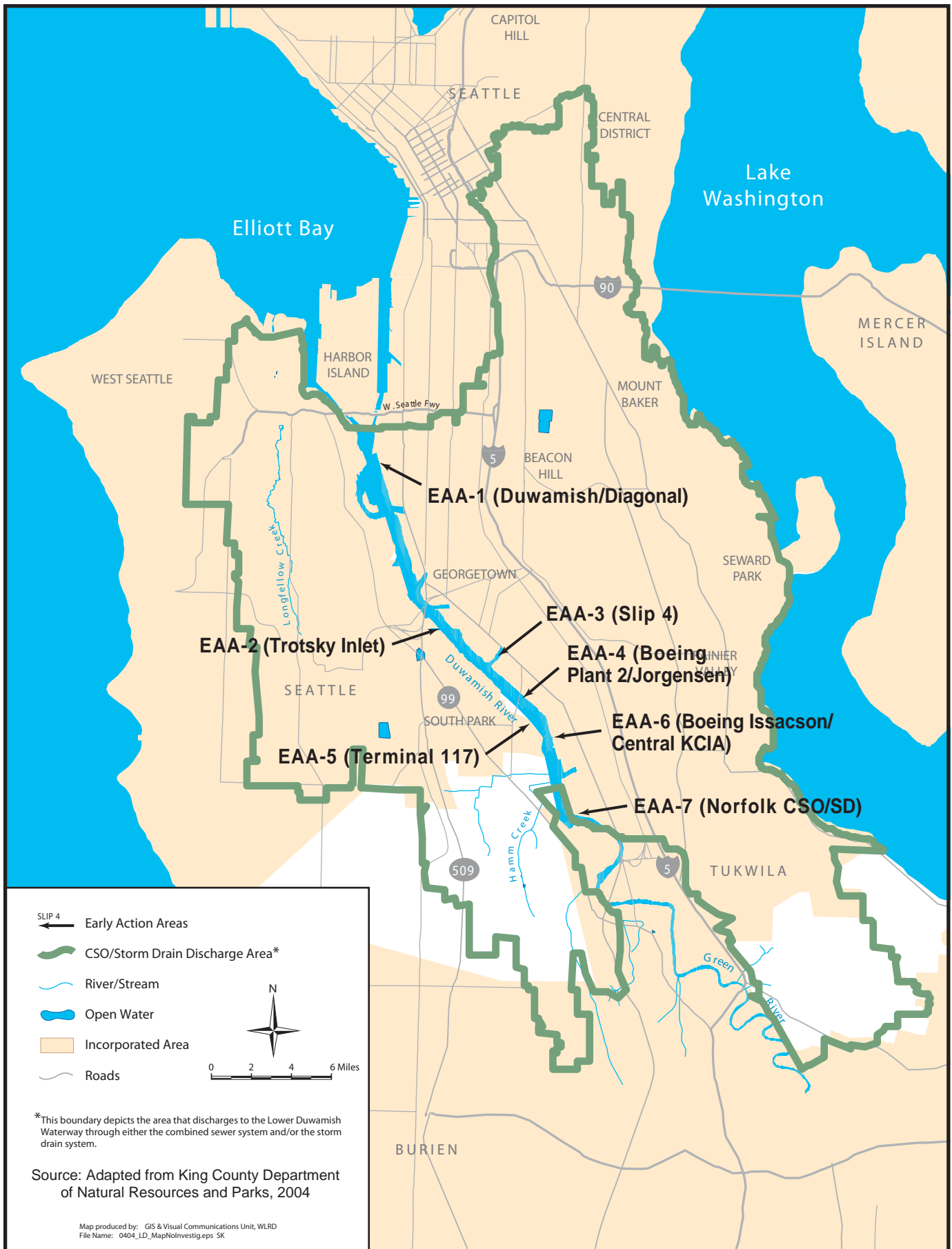
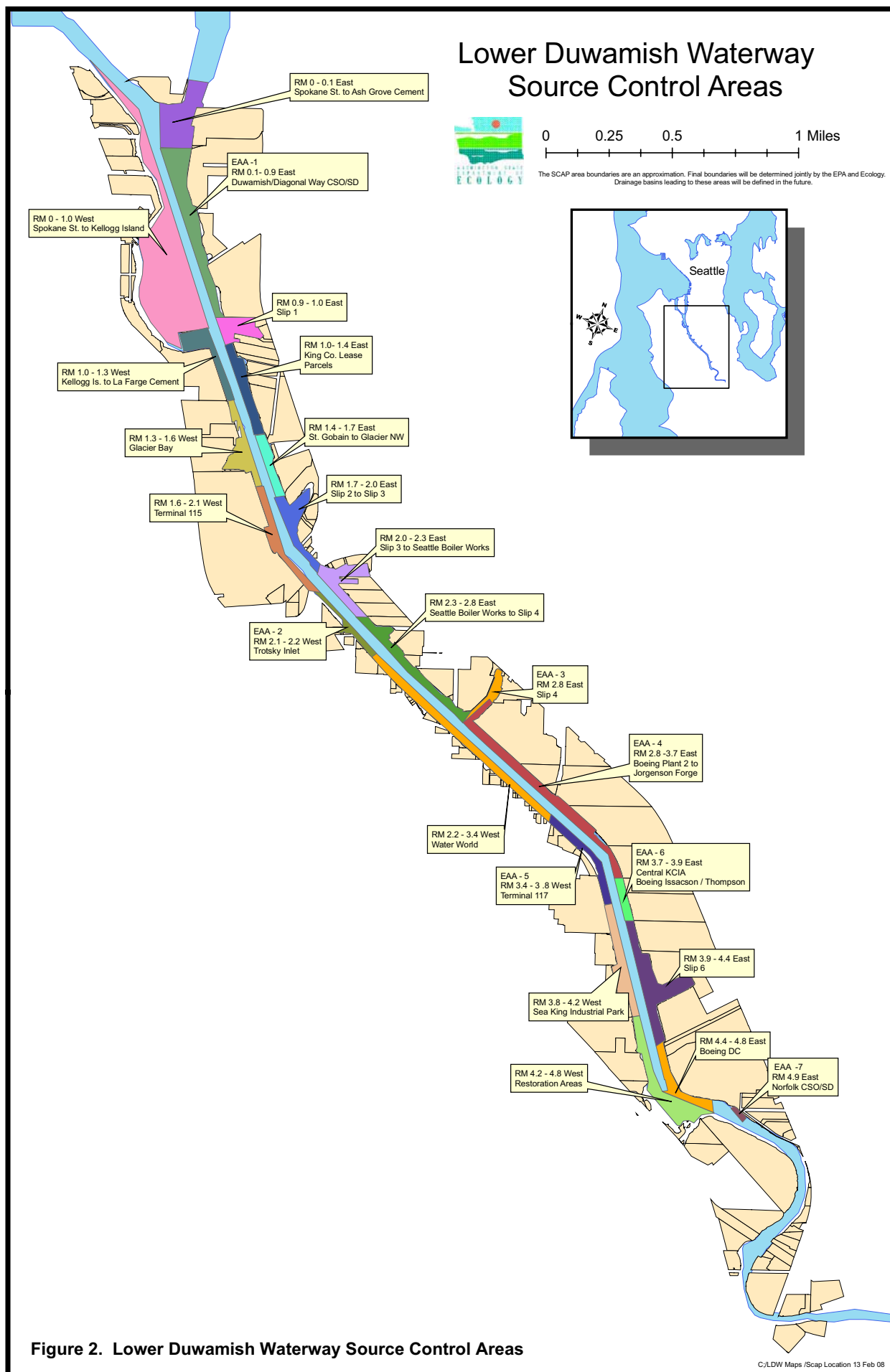
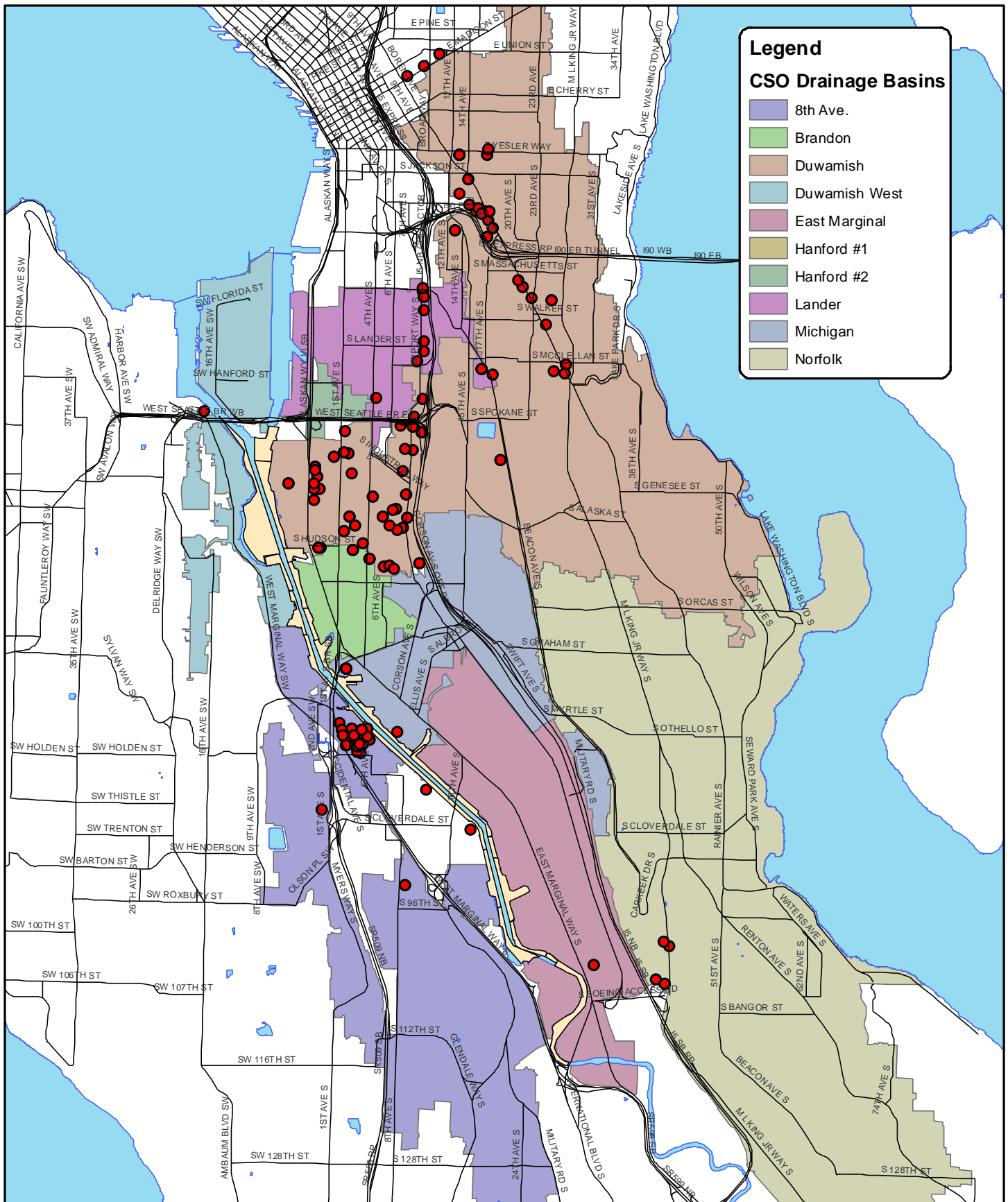


Figure 1. Lower Duwamish Waterway Site

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Legend

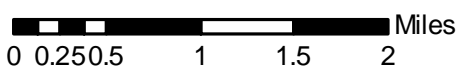
CSO Drainage Basins

- 8th Ave.
- Brandon
- Duwamish
- Duwamish West
- East Marginal
- Hanford #1
- Hanford #2
- Lander
- Michigan
- Norfolk

Key

- Road
- 2007 Bldg. Inspections
- water body

Figure 3. SPU Business Inspections - 2007



Scale: 1:65,000
WA State Plane
North, NAD83



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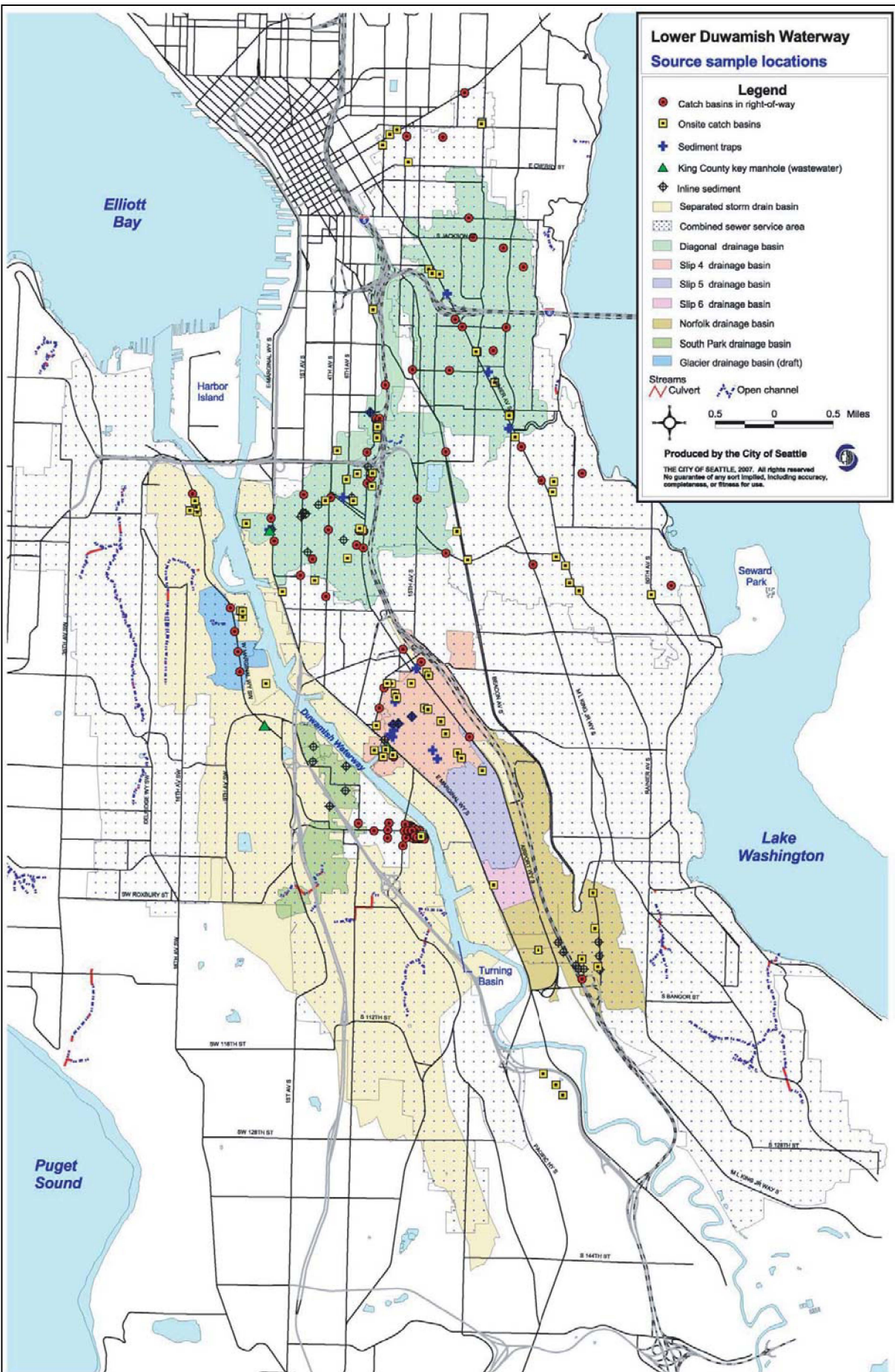
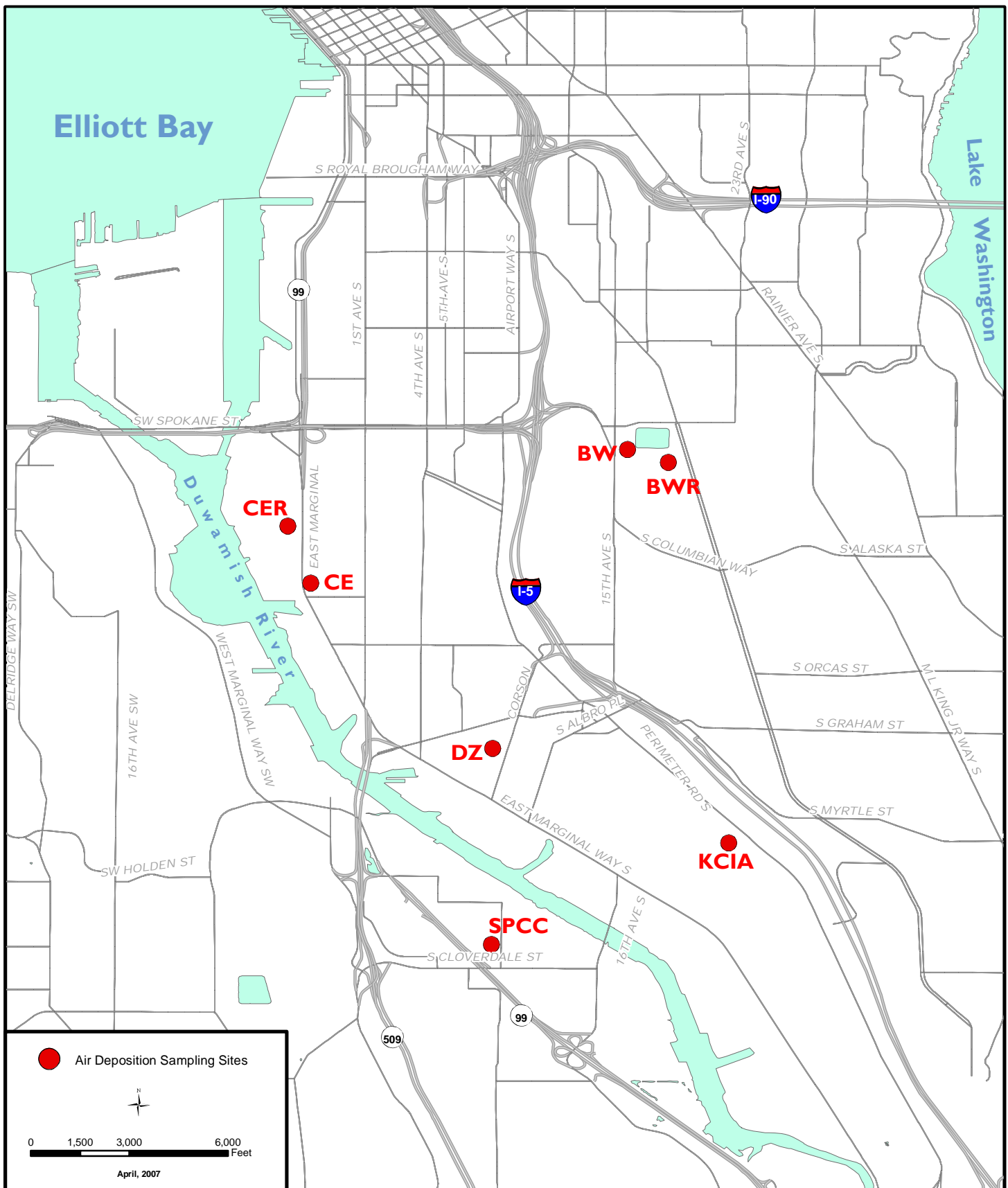


Figure 4. Source Tracing Sample Locations

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King County
 Department of
 Natural Resources and Parks
**Wastewater Treatment
 Division**

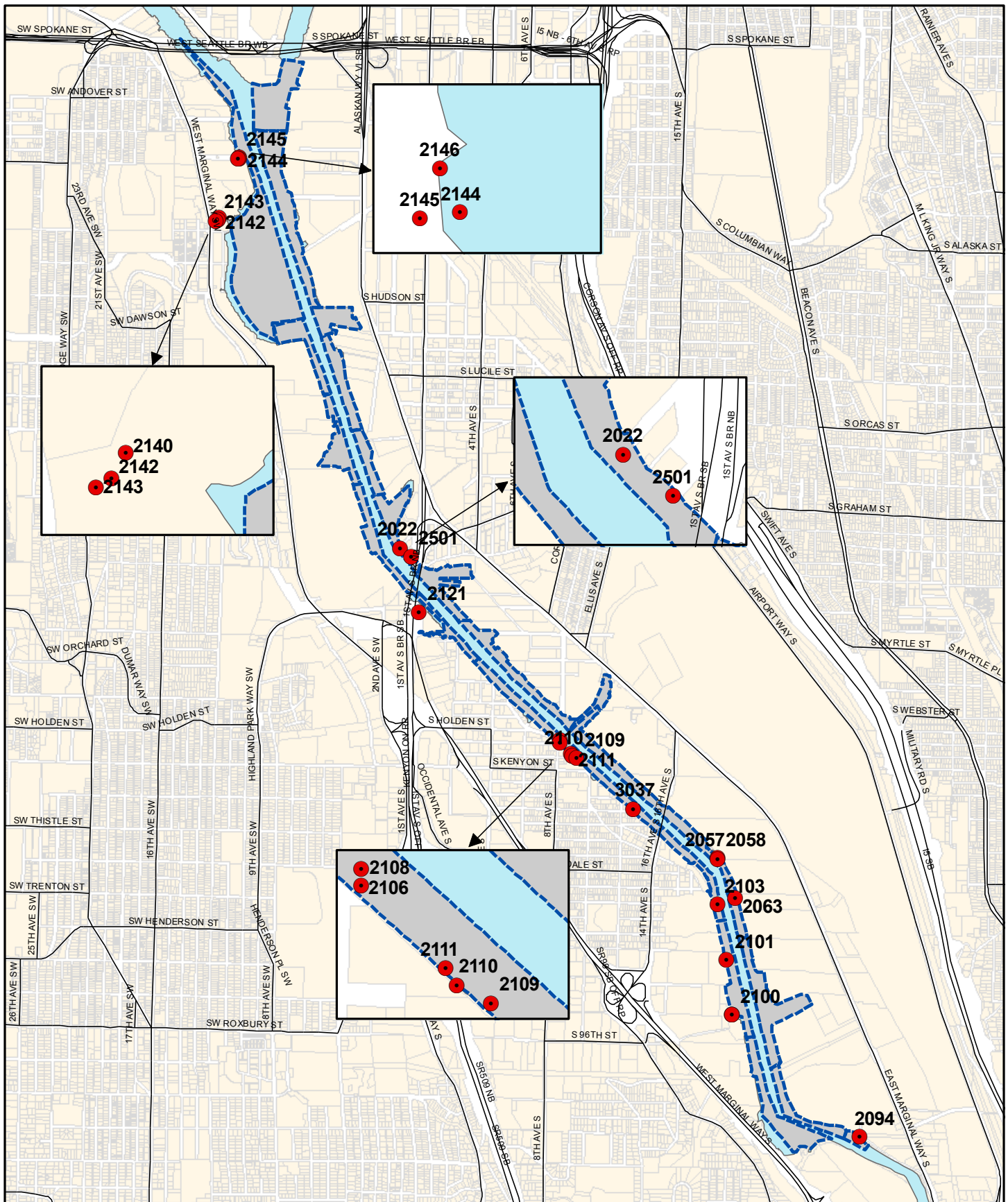
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 Nick Boyce - April 25, 2007

**Air Deposition
 Sampling Stations**

Figure 5. Passive Atmospheric Deposition Sampling Locations
 Source: King County 2008

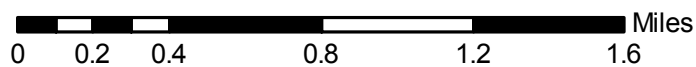
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Key

- Outfall
- Road
- Source Control Area
- Parcel

Figure 6. Unknown Outfall Locations

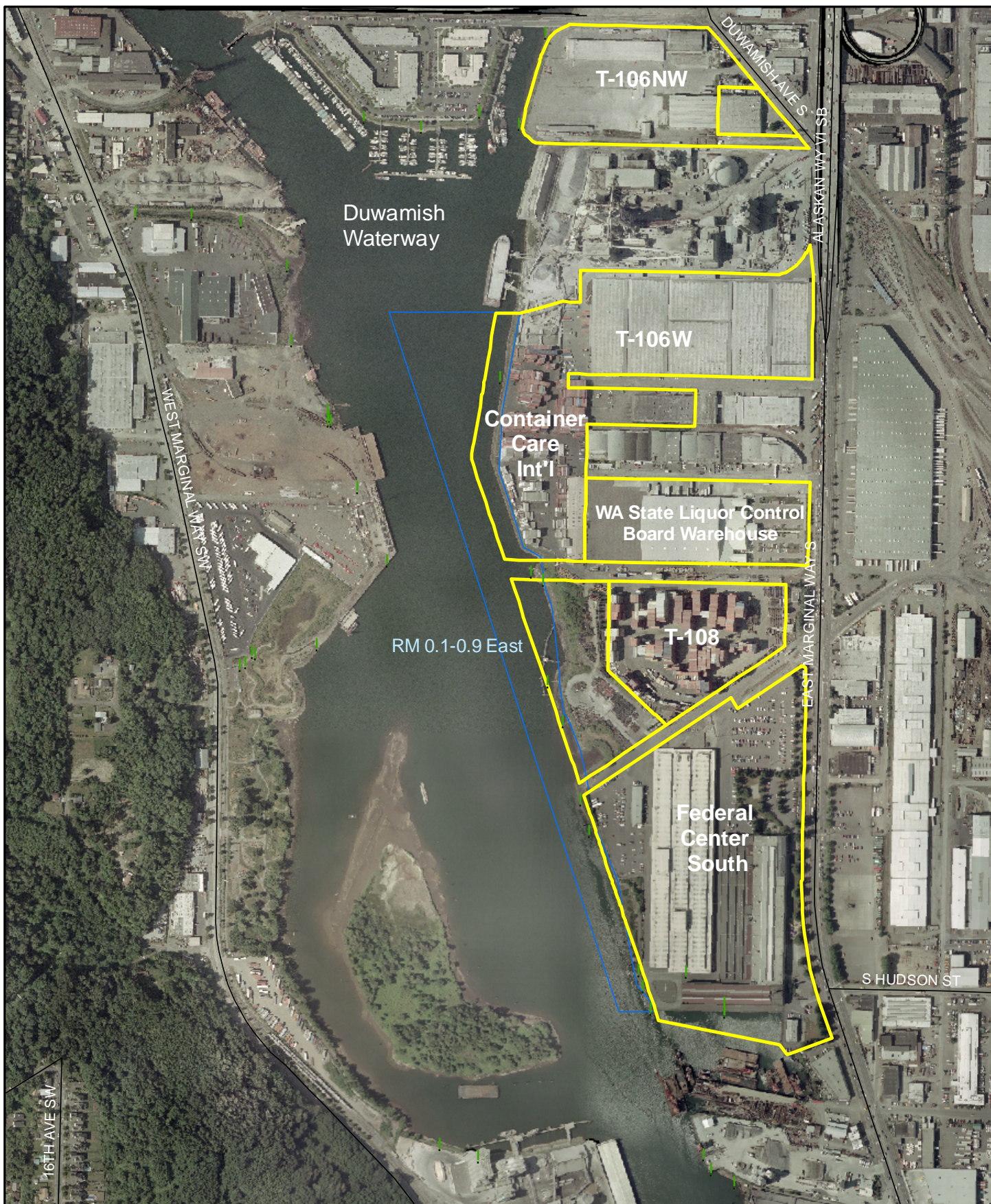


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WA State Plane
North, NAD83



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Key

- Source Control Area
- Property Boundary
- Road
- ! Outfall

Figure 7. Early Action Area 1: Duwamish/Diagonal

0 225 450 900 1,350 1,800 Feet

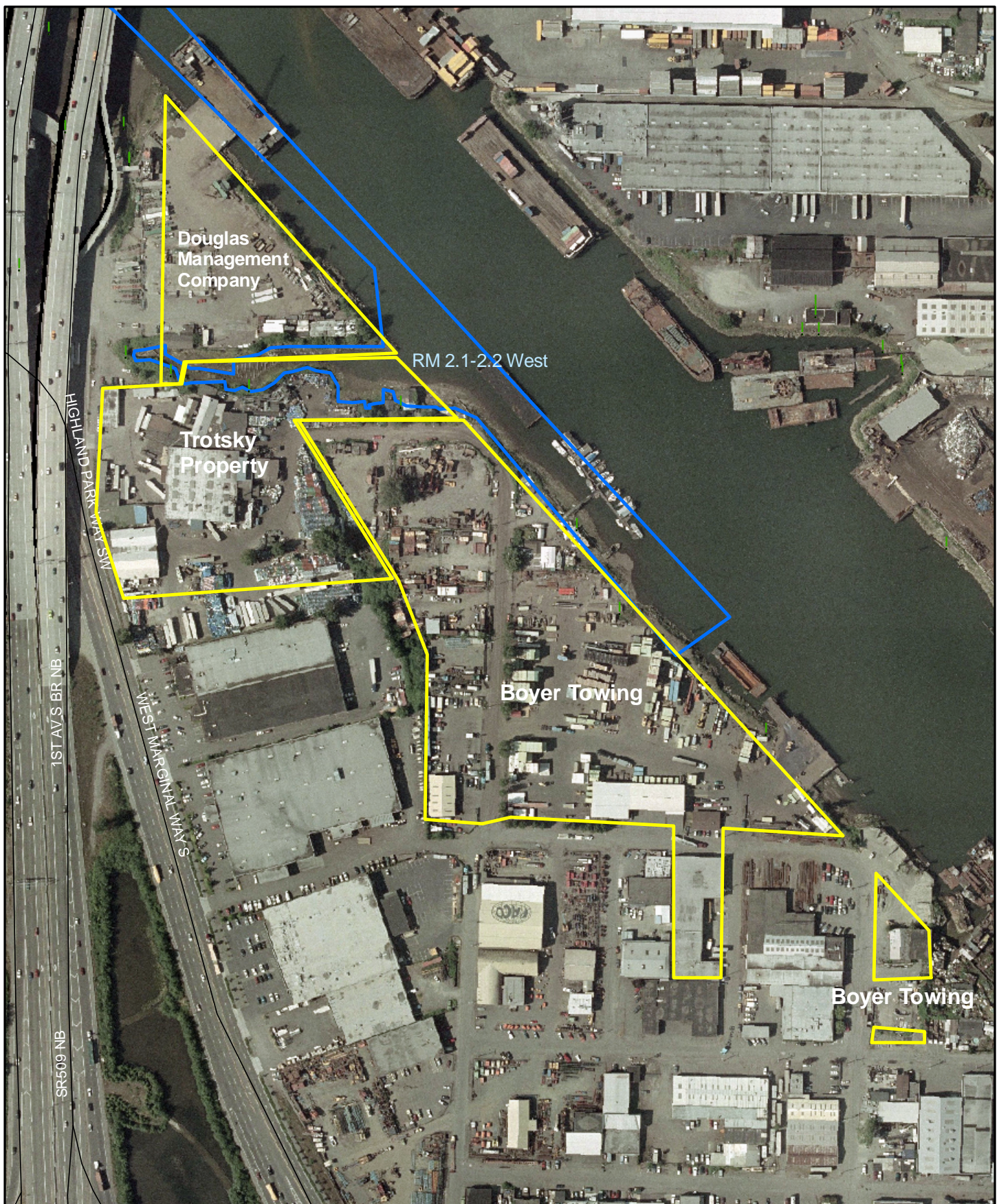
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WA State Plane
North, NAD83

SAIC
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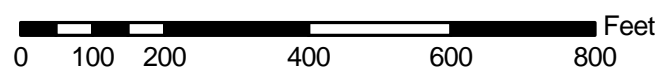
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Key

- ▬ Source Control Area
- ▬ Property Boundary
- ▬ Road
- | Outfall

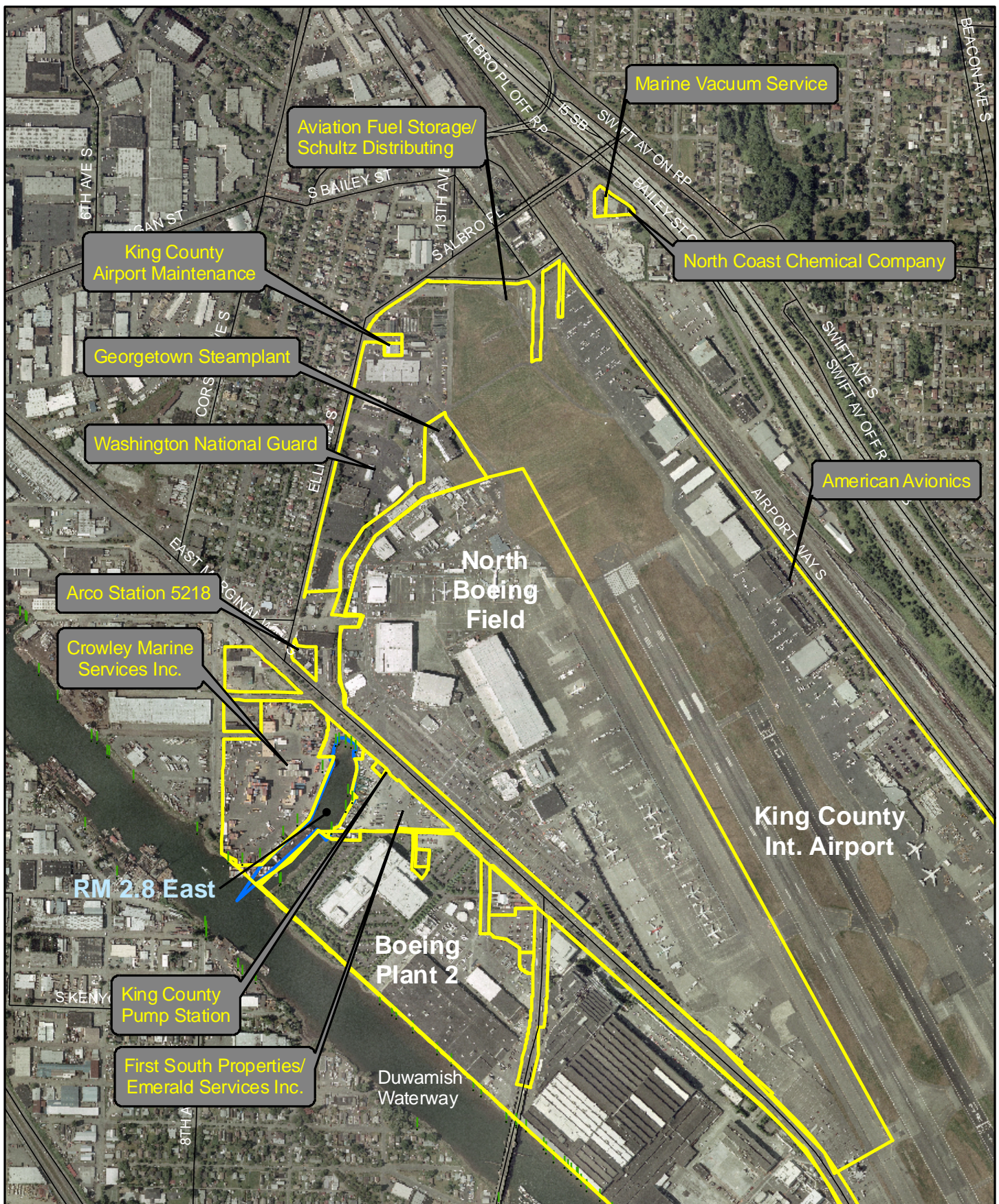
Figure 8. Early Action Area 2: Trotsky Inlet



Scale: 1:3,200
WA State Plane
North, NAD83



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Key

- Source Control Area
- Property Boundary
- Road
- ! Outfall

Figure 9. Early Action Area 3: Slip 4

0 250 500 1,000 1,500 2,000 Feet

Scale: 1:11,000

WA State Plane
North, NAD83

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Key

- ▬ Source Control Area
- ▬ Property Boundary
- ▬ Road
- ! Outfall

**Figure 10. Early Action Area 4:
Boeing Plant 2/Jorgensen Forge**

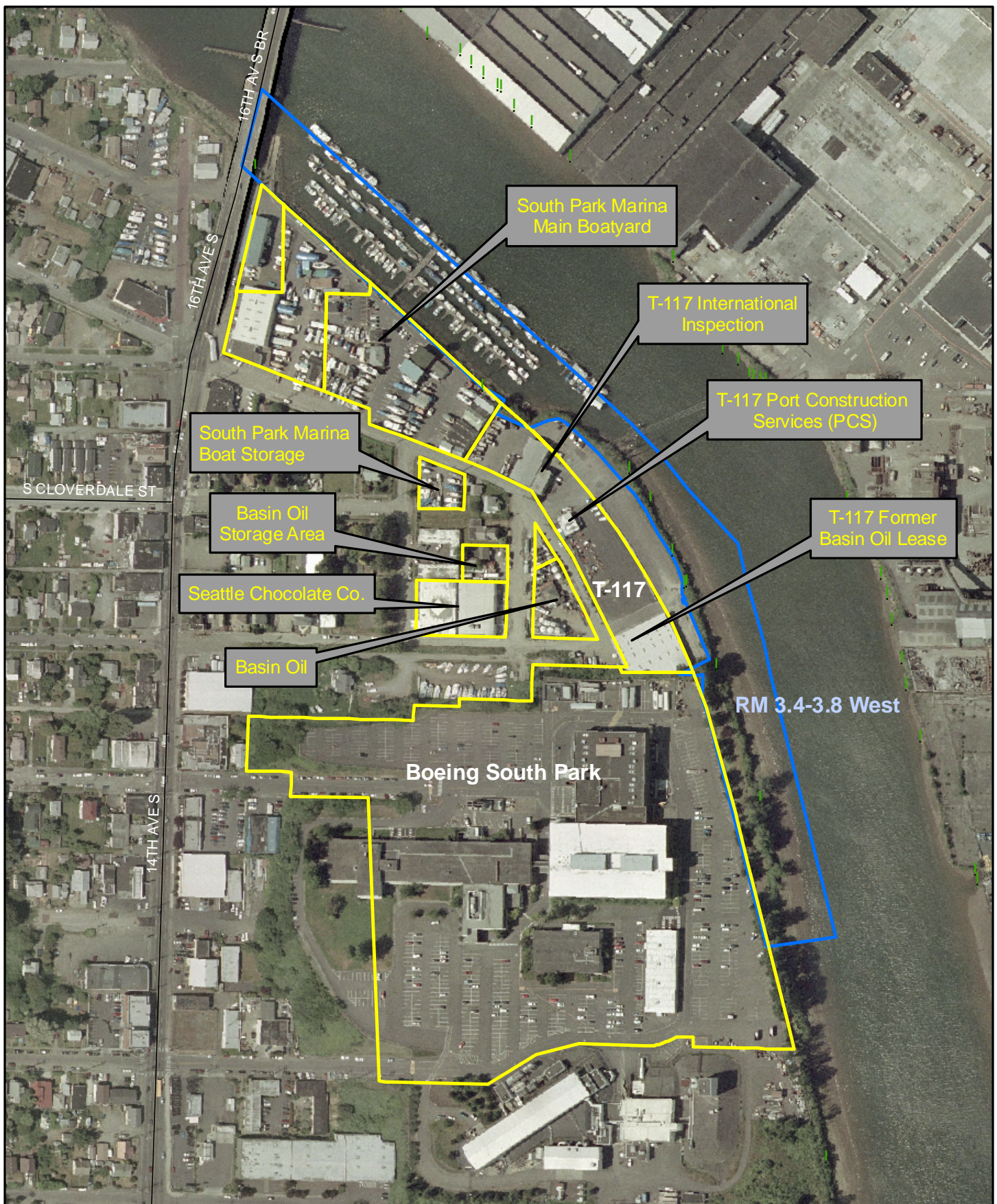
Feet
 0 187.5375 750 1,125 1,500

Scale: 1:8,000
WA State Plane
North, NAD83

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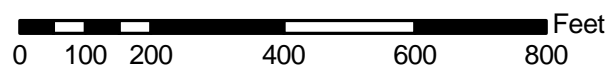
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Key

- Property Boundary
- Source Control Area
- Road
- ! Outfall

Figure 11. Early Action Area 5: Terminal 117



Scale: 1:3,500

WA State Plane
North, NAD83



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Key

- Source Control Area
- Property Boundary
- Road
- ! Outfall

**Figure 12. Early Action Area 6:
Boeing Isaacson/Central KCIA**

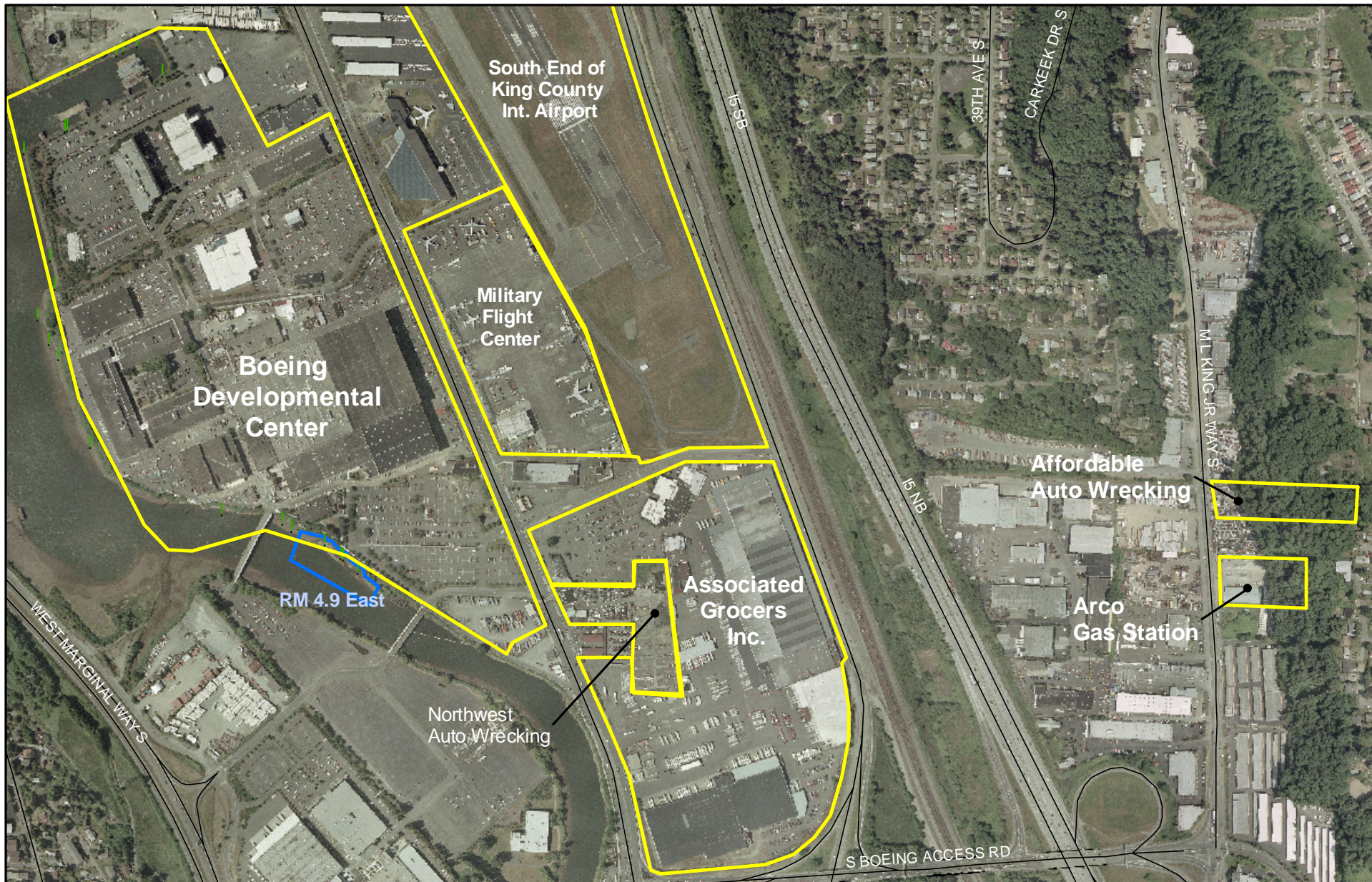
0 125 250 500 750 1,000 Feet

Scale: 1:4,500
WA State Plane
North, NAD83

SAIC
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Key

- Property Boundary
- Source Control Area
- Road
- ! Outfall

Figure 13. Early Action Area 7: Norfolk CSO/SD

0 250 500 1,000 1,500 2,000 Feet

Scale: 1:9,000
WA State Plane
North, NAD83

SAIC
From Science to Solutions



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Key

- ▬ Property Boundary
- ▬ Source Control Area
- ▬ Road
- ! Outfall

Figure 14. RM 3.9 - 4.4 East (Slip 6)

0 175 350 700 1,050 1,400 Feet

Scale: 1:7,000
WA State Plane
North, NAD83

SAIC
From Science to Solutions



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Key

- Source Control Area
- Property Boundary
- Road
- ! Outfall

Figure 15. RM 1.3-1.6 West (Glacier Bay)

0 75 150 300 450 600 Feet

Scale: 1:3,000

WA State Plane
North, NAD83

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Appendix A
LDW Source Control Schedule

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Appendix A

Basic Assumptions for Creating Schedule and Timeline

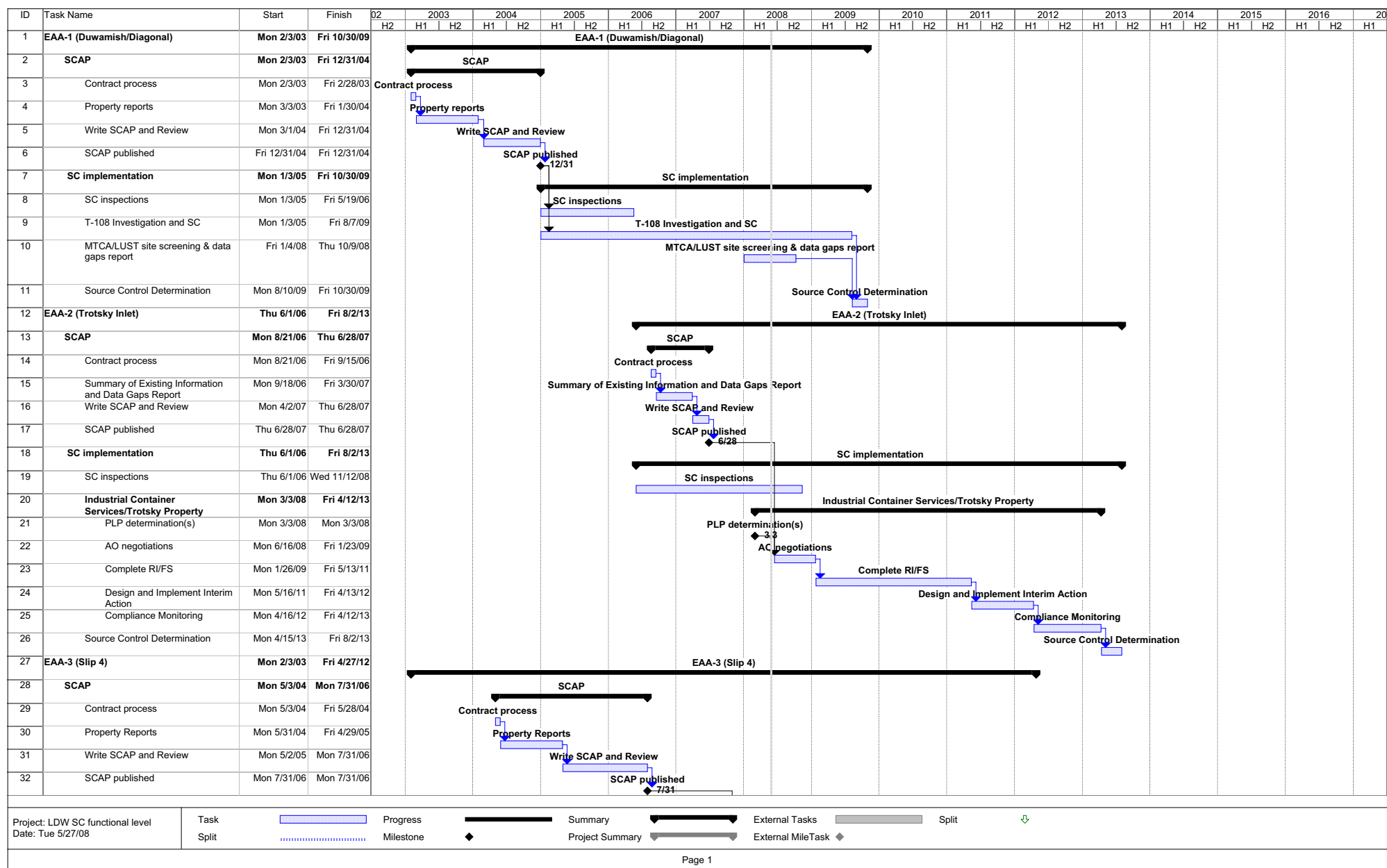
A set of basic assumptions was used to model the scenario for those tasks yet to be started or completed. For sites where work has already begun, actual dates were used wherever possible.

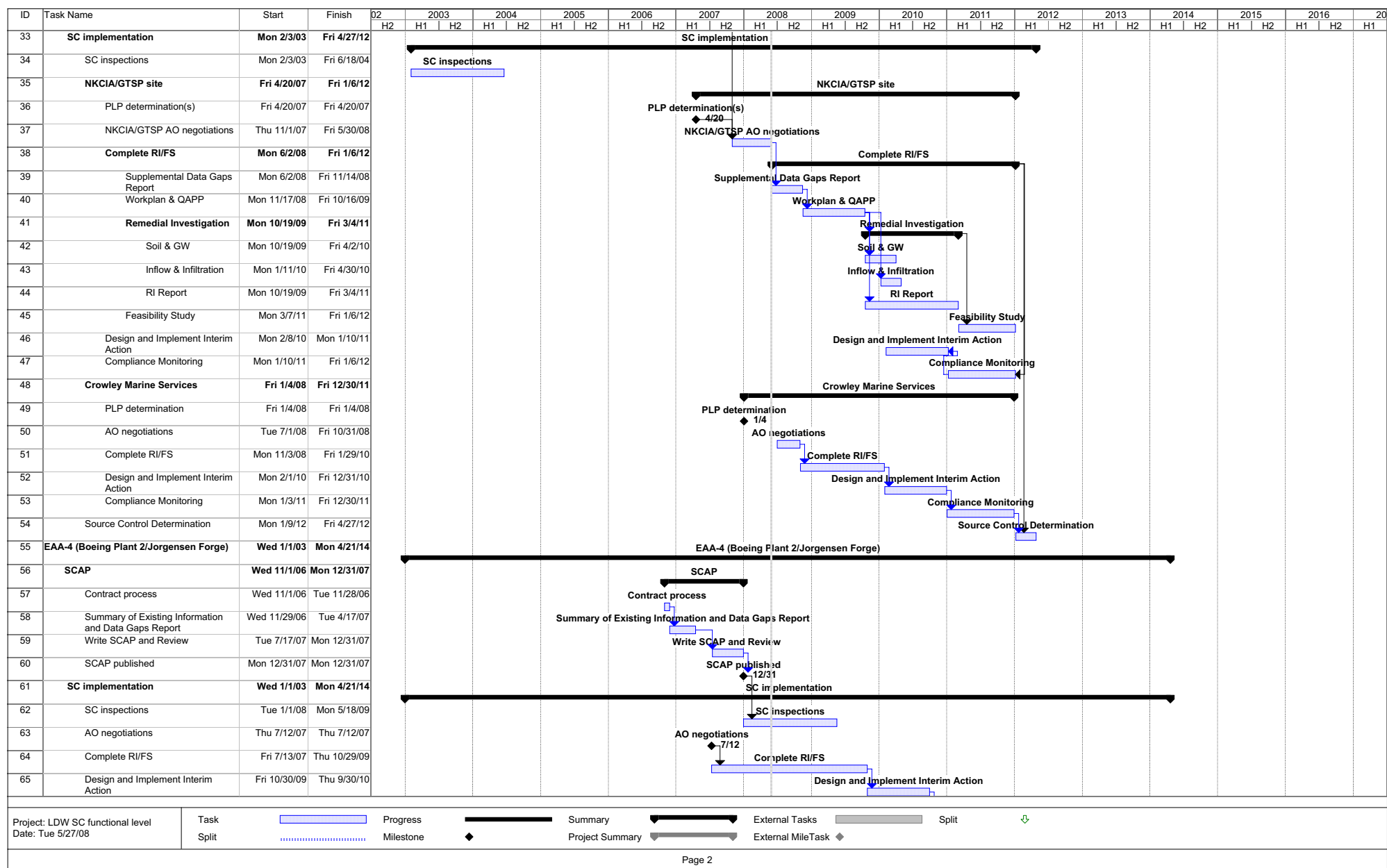
The following process assumptions were made:

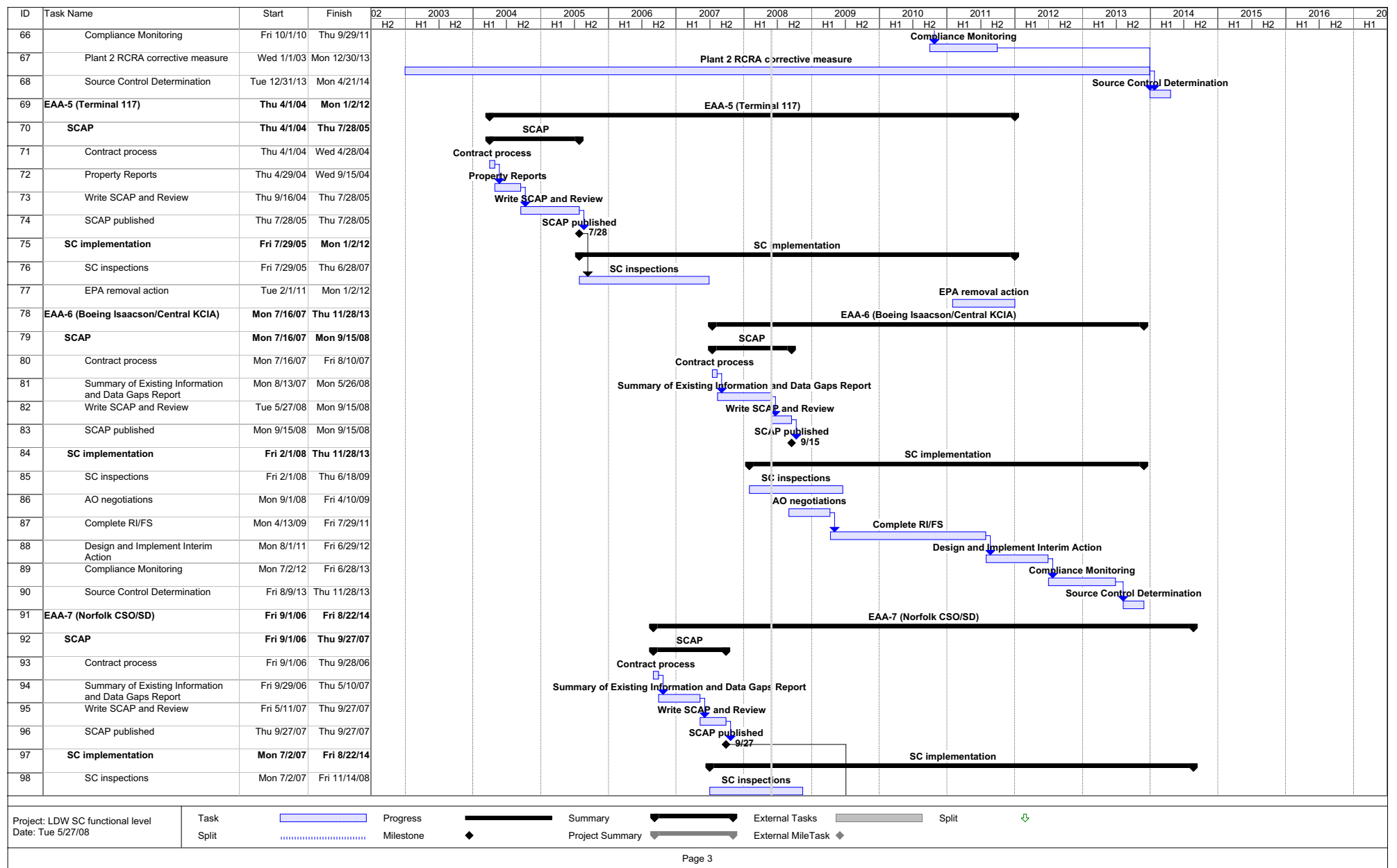
- Each Source Control Action Plan (SCAP) yields one site where soil or groundwater contamination requires cleanup to stop contamination or recontamination of sediments.
- Upland site cleanup is the critical path for source control for most sediment cleanup areas.
- An Agreed Order takes approximately 8 months to complete, as follows:
 - Credible evidence exists to support issuing a preliminary Potentially Liable Party (PLP) Notice letter to the owner/operator within two weeks of publication of the SCAP.
 - Owner/operator does not respond to preliminary PLP letter until the last day of the 30-day response period.
 - No new potential PLPs are identified who must be notified and included in negotiations.
 - PLP determination letter is sent two weeks after receiving the owner/operator response.
 - Negotiations for an Agreed Order begin 30 days after Ecology sends the PLP determination letter.
 - Negotiations are complete within five months of start of negotiations. This includes the 30-day public comment period.
- Remedial Investigation/Feasibility Study (RI/FS) takes 30 months. This includes sampling plans, field work, and draft and final RI/FS reports.
- Interim action requires completion of the RI/FS.
- The interim action does not require in-water work.
- Interim action to stop the release of contaminants is completed 12 months after acceptance of the RI/FS. This includes scoping, review and approval of design and monitoring plans, field work, and Ecology acceptance of the final action reports.
- Monitoring of the Interim Action starts one month after completion of field work, and continues for 12 months (assume quarterly monitoring), for a total of 13 months.
- Ecology accepts final Compliance Monitoring report four months after the end of the monitoring period. Ecology determines the source is controlled.

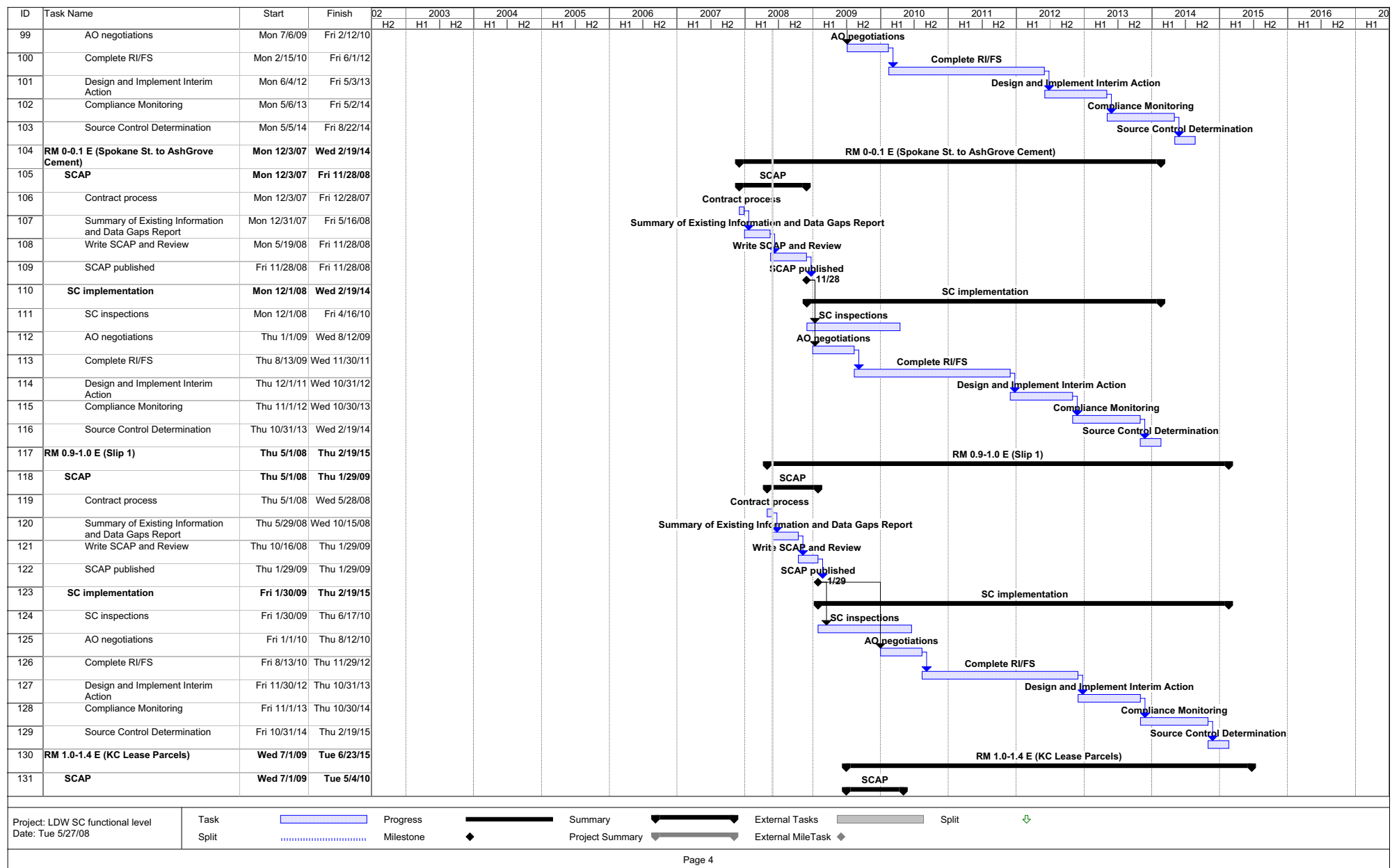
The staffing scenario is based on known or anticipated assignments as of March 2008. The following staffing assumptions were made:

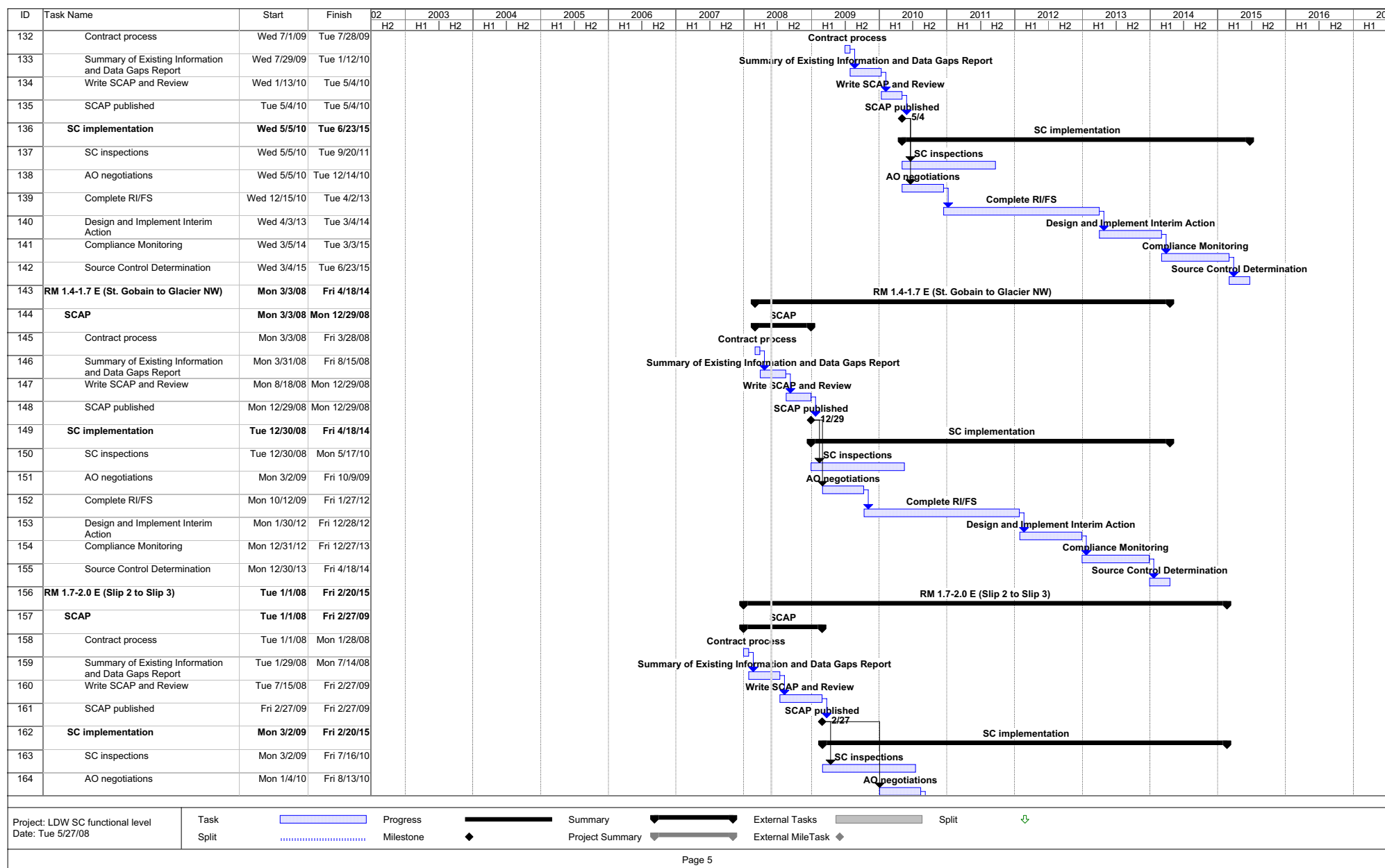
- A full-time site manager, with no existing workload, can initially handle two sites, starting six months apart.
- Eighteen months after starting the first site, a full-time site manager can take on a third site. Six months later, they will start work on a fourth site. Eighteen months after starting the third site, a full-time site manager can take on a fifth site; six months later, they will start work on a sixth site.
- Work at EAA-1 (Duwamish/Diagonal) is underway. The work at EAA-1 is being done by the Port of Seattle at Terminal 108 as an independent action. The Port is working with Ecology.
- Work at EAA-5 (Terminal 117) is underway. Terminal 117 is an EPA-lead site.
- Work at Rhone-Poulenc (RM 3.9-4.4 East; Slip 6) and EAA-4 (Boeing Plant 2/Jorgensen Forge bank) is underway. Both are EPA-lead sites.
- Work at Kenworth Truck/PACCAR (RM 3.9-4.4 East; Slip 6) and EAA-4 (Jorgensen Forge uplands) has started. Site managers for these sites are not dedicated to work on the LDW, therefore they are not included in the projected schedule for the full-time site managers.
- Interim remedial action and compliance monitoring at EAA-3 (Slip 4) will be conducted concurrently with completion of the RI/FS.
- Three full-time site managers are assigned exclusively to the LDW.
- A fourth full-time site manager will be hired. For planning purposes, the new site manager is assumed to start on July 1, 2008.





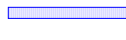






ID	Task Name	Start	Finish
165	Complete RI/FS	Mon 8/16/10	Fri 11/30/12
166	Design and Implement Interim Action	Mon 12/3/12	Fri 11/1/13
167	Compliance Monitoring	Mon 11/4/13	Fri 10/31/14
168	Source Control Determination	Mon 11/3/14	Fri 2/20/15
169	RM 2.0-2.3 E (Slip 3 to SBW)	Tue 1/1/08	Fri 12/6/13
170	SCAP	Tue 1/1/08	Fri 8/29/08
171	Contract process	Tue 1/1/08	Mon 1/28/08
172	Summary of Existing Information and Data Gaps Report	Tue 1/29/08	Mon 5/19/08
173	Write SCAP and Review	Tue 5/20/08	Fri 8/29/08
174	SCAP published	Fri 8/29/08	Fri 8/29/08
175	SC implementation	Mon 9/1/08	Fri 12/6/13
176	SC inspections	Mon 9/1/08	Fri 1/15/10
177	AO negotiations	Mon 10/20/08	Fri 5/29/09
178	Complete RI/FS	Mon 6/1/09	Fri 9/16/11
179	Design and Implement Interim Action	Mon 9/19/11	Fri 8/17/12
180	Compliance Monitoring	Mon 8/20/12	Fri 8/16/13
181	Source Control Determination	Mon 8/19/13	Fri 12/6/13
182	RM 2.3-2.8 E (SBW to Slip 4)	Mon 9/3/07	Fri 6/6/14
183	SCAP	Mon 9/3/07	Wed 12/31/08
184	Contract process	Mon 9/3/07	Fri 9/28/07
185	Summary of Existing Information and Data Gaps Report	Mon 10/1/07	Fri 5/9/08
186	Write SCAP and Review	Mon 5/12/08	Wed 12/31/08
187	SCAP published	Wed 12/31/08	Wed 12/31/08
188	SC implementation	Thu 1/1/09	Fri 6/6/14
189	SC inspections	Thu 1/1/09	Wed 5/19/10
190	AO negotiations	Mon 4/20/09	Fri 11/27/09
191	Complete RI/FS	Mon 11/30/09	Fri 3/16/12
192	Design and Implement Interim Action	Mon 3/19/12	Fri 2/15/13
193	Compliance Monitoring	Mon 2/18/13	Fri 2/14/14
194	Source Control Determination	Mon 2/17/14	Fri 6/6/14
195	RM 3.9-4.4 E (Slip 6)	Wed 8/1/07	Tue 3/5/13
196	SCAP	Wed 8/1/07	Thu 7/31/08
197	Contract process	Wed 8/1/07	Tue 8/28/07

Project: LDW SC functional level
Date: Tue 5/27/08

Task
Split

Progress	Milestone
100%	100%



Summary

Project Summary



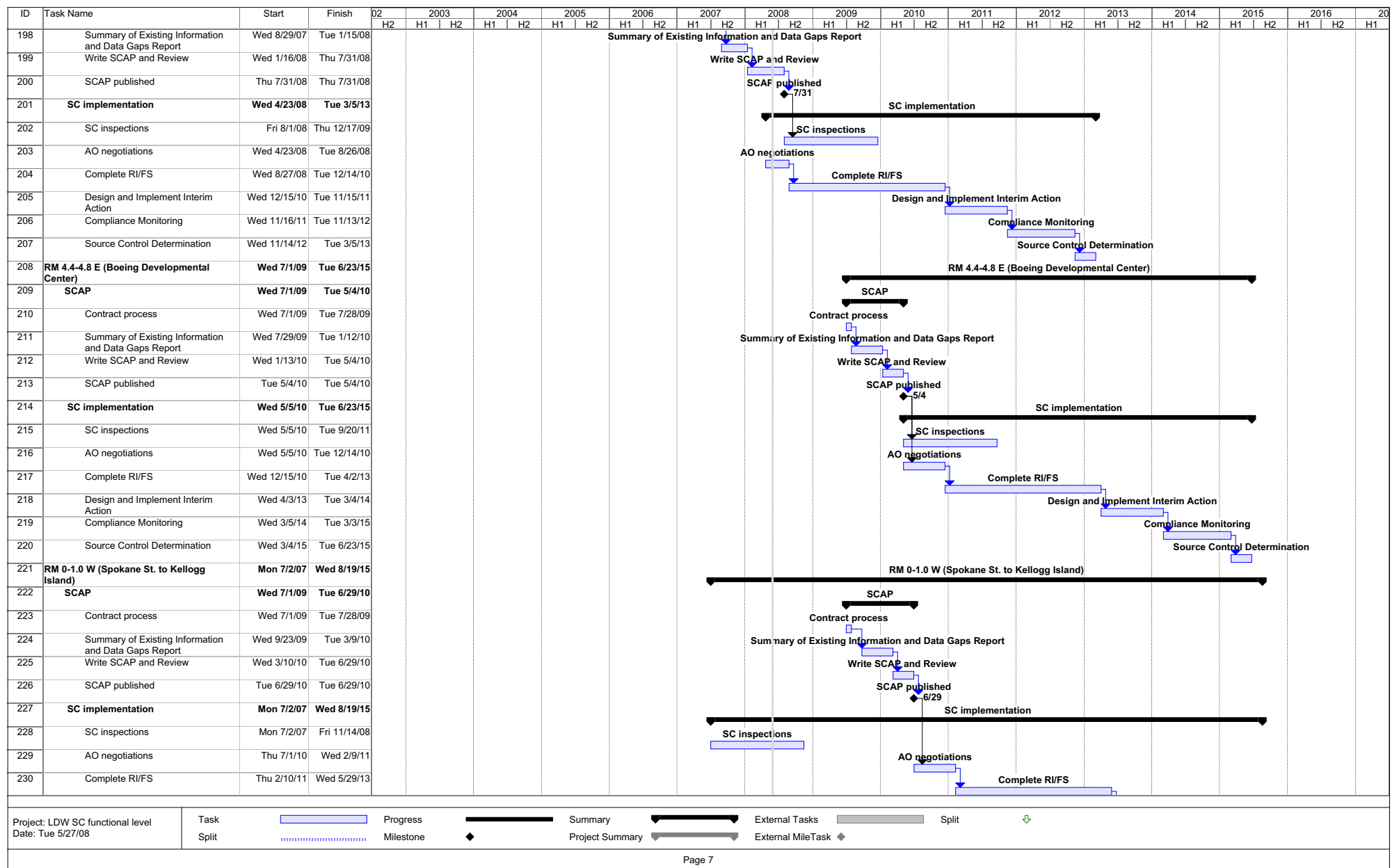
External Tasks

External MileTa



Split





ID	Task Name	Start	Finish
231	Design and Implement Interim Action	Thu 5/30/13	Wed 4/30/14
232	Compliance Monitoring	Thu 5/1/14	Wed 4/29/15
233	Source Control Determination	Thu 4/30/15	Wed 8/19/15
234	RM 1.0-1.3 W (Kellogg Island to Lafarge)	Mon 7/2/07	Tue 10/20/15
235	SCAP	Wed 7/1/09	Tue 6/29/10
236	Contract process	Wed 7/1/09	Tue 7/28/09
237	Summary of Existing Information and Data Gaps Report	Wed 9/23/09	Tue 3/9/10
238	Write SCAP and Review	Wed 3/10/10	Tue 6/29/10
239	SCAP published	Tue 6/29/10	Tue 6/29/10
240	SC implementation	Mon 7/2/07	Tue 10/20/15
241	SC inspections	Mon 7/2/07	Fri 11/14/08
242	AO negotiations	Wed 9/1/10	Tue 4/12/11
243	Complete RI/FS	Wed 4/13/11	Tue 7/30/13
244	Design and Implement Interim Action	Wed 7/31/13	Tue 7/1/14
245	Compliance Monitoring	Wed 7/2/14	Tue 6/30/15
246	Source Control Determination	Wed 7/1/15	Tue 10/20/15
247	RM 1.3-1.6 West (Glacier Bay)	Thu 2/1/07	Mon 8/19/13
248	SCAP	Thu 2/1/07	Fri 12/28/07
249	Contract process	Thu 2/1/07	Wed 2/28/07
250	Summary of Existing Information and Data Gaps Report	Thu 3/1/07	Wed 5/23/07
251	Write SCAP and Review	Thu 5/24/07	Fri 12/28/07
252	SCAP published	Fri 12/28/07	Fri 12/28/07
253	SC implementation	Thu 5/10/07	Mon 8/19/13
254	SC inspections	Mon 12/31/07	Fri 5/15/09
255	Duwamish Shipyard	Thu 5/10/07	Mon 10/17/11
256	PLP determination	Thu 5/10/07	Thu 5/10/07
257	AO negotiations	Tue 3/11/08	Mon 6/30/08
258	Complete RI/FS	Tue 7/1/08	Mon 11/16/09
259	Design and Implement Interim Action	Tue 11/17/09	Mon 10/18/10
260	Compliance Monitoring	Tue 10/19/10	Mon 10/17/11
261	Glacier Northwest (or other adjacent site)	Tue 7/1/08	Mon 4/29/13
262	PLP determination	Tue 7/1/08	Tue 7/1/08
263	AO negotiations	Tue 7/1/08	Mon 2/9/09

Project: LDW SC functional level
Date: Tue 5/27/08

Task Split

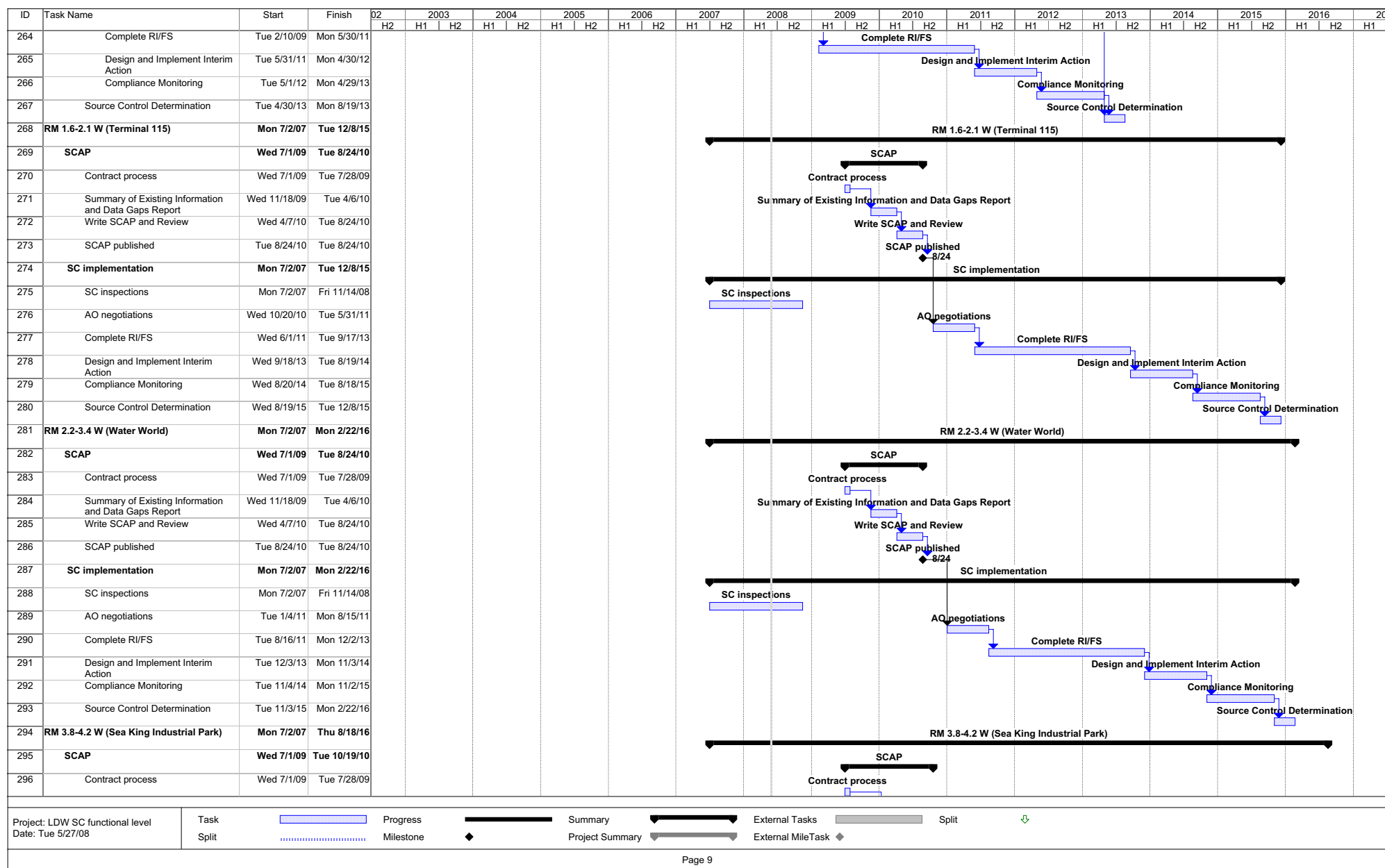
Progress Milestone

Summary Project Summary

External Tasks External MileTask

Split Task

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Appendix B
King County and SPU Source
Control Business Inspections

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Appendix B: SPU/King County Business Inspections (2007)

Facility	Address	Inspection Type	Date Inspected	Basin	Subbasin
Lifelong Aids Alliance	1002 E Seneca St	Initial	3/22/2007	Diagonal CSO	Diagonal CSO
Lifelong Aids Alliance	1002 E Seneca St	Followup	7/24/2007	Diagonal CSO	Diagonal CSO
Mikado Restaurant	1306 S King St	Initial	9/11/2007	Diagonal CSO	Diagonal CSO
Mikado Restaurant	1306 S King St	Followup	11/8/2007	Diagonal CSO	Diagonal CSO
Money Tree	1400 Madison St	Initial	8/21/2007	Diagonal CSO	Diagonal CSO
The Buzz Shop	1122 E Madison St	Screening	2/26/2007	Diagonal CSO	Diagonal CSO
A-1 Auto Repair & Towing, Inc.	1821 Rainier Ave S	Initial	8/9/2007	Duwamish	Diagonal SD
A-1 Auto Repair & Towing, Inc.	1821 Rainier Ave S	Followup	11/7/2007	Duwamish	Diagonal SD
Air Cold Supply	594 S Dawson St	Initial	7/23/2007	Duwamish	Diagonal SD
Air Cold Supply	594 S Dawson St	Followup	9/13/2007	Duwamish	Diagonal SD
Amazon.com	1200 12th Ave S	Initial	10/8/2007	Duwamish	Diagonal SD
Amazon.com	1200 12th Ave S	Followup	10/22/2007	Duwamish	Diagonal SD
Apex Facility Resources	4435 Colorado Ave S	Initial	7/26/2007	Duwamish	Diagonal SD
Apex Facility Resources	4435 Colorado Ave S	Followup	10/2/2007	Duwamish	Diagonal SD
Arctic Commercial Refrigeration Inc.	4050 E Marginal Wy S	Initial	7/26/2007	Duwamish	Diagonal SD
Arctic Commercial Refrigeration Inc.	4050 E Marginal Wy S	Followup	9/11/2007	Duwamish	Diagonal SD
Bailey Gazert Elementary School	1301 E Yesler Wy	Initial	5/24/2007	Duwamish	Diagonal SD
Bailey Gazert Elementary School	1301 E Yesler Wy	Followup	5/31/2007	Duwamish	Diagonal SD
Bailey Gazert Elementary School	1301 E Yesler Wy	Followup	8/9/2007	Duwamish	Diagonal SD
Bailey Gazert Elementary School	1301 E Yesler Wy	Followup	10/18/2007	Duwamish	Diagonal SD
Bailey Gazert Elementary School	1301 E Yesler Wy	Followup	12/7/2007	Duwamish	Diagonal SD
Bartell Durgs	4140 E Marginal Wy S	Initial	6/28/2007	Duwamish	Diagonal SD
BMP Painting Contractors, Inc.	1922 Airport Wy S	Initial	10/1/2007	Duwamish	Diagonal SD
Budget Batteries	2006 Rainier Ave S	Initial	10/30/2007	Duwamish	Diagonal SD
Bush Woodcraft	841 Rainier Ave S	Initial	8/31/2007	Duwamish	Diagonal SD
Bush Woodcraft	841 Rainier Ave S	Followup	11/15/2007	Duwamish	Diagonal SD
C & C Food Store	3002 Beacon Ave S	Initial	10/29/2007	Duwamish	Diagonal SD
Cascade Designs	4000 1st Ave S	Initial	9/18/2007	Duwamish	Diagonal SD
Cascade Designs	3857 2nd Ave S	Initial	9/18/2007	Duwamish	Diagonal SD
Cascade Designs	3800 1st Ave S	Initial	9/18/2007	Duwamish	Diagonal SD
Cascade Designs	4000 1st Ave S	Followup	12/18/2007	Duwamish	Diagonal SD
Cascade Designs	4225 2nd Ave S	Followup	1/31/2007	Duwamish	Diagonal SD
Cascade Designs	130 S Dakota St	Initial	9/18/2007	Duwamish	Diagonal SD
Cascade Machinery & Electric, Inc.	4600 E Marginal Wy S	Initial	10/8/2007	Duwamish	Diagonal SD
Center For Career Alternatives	901 Rainier Ave S	Initial	5/29/2007	Duwamish	Diagonal SD
Chevron Station	2802 Rainier Ave S	Initial	7/12/2007	Duwamish	Diagonal SD
Chevron Station	2802 Rainier Ave S	Followup	8/30/2007	Duwamish	Diagonal SD
City of Seattle	2700 Airport Wy S	Initial	11/6/2007	Duwamish	Diagonal SD
CL Auto Repair	2901 17th Ave S	Initial	8/10/2007	Duwamish	Diagonal SD
CL Auto Repair	2901 17th Ave S	Followup	10/1/2007	Duwamish	Diagonal SD
CL Auto Repair	2901 17th Ave S	Followup	10/8/2007	Duwamish	Diagonal SD

Appendix B: SPU/King County Business Inspections (2007)

Facility	Address	Inspection Type	Date Inspected	Basin	Subbasin
Color Graphics	1421 S Dean St	Initial	10/8/2007	Duwamish	Diagonal SD
Color Graphics	1421 S Dean St	Followup	11/15/2007	Duwamish	Diagonal SD
DHL Express	4450 E Marginal Wy S	Initial	10/10/2007	Duwamish	Diagonal SD
Eco Waterborne Coatings	420 S Hinds St	Initial	8/31/2007	Duwamish	Diagonal SD
Emerald City Bindery	4809 Airport Wy S	Initial	10/17/2007	Duwamish	Diagonal SD
Emerald City Bindery	4809 Airport Wy S	Followup	12/12/2007	Duwamish	Diagonal SD
Emmanuel's Inc.	1105 Rainier Ave S	Initial	7/12/2007	Duwamish	Diagonal SD
Emmanuel's Inc.	1105 Rainier Ave S	Followup	8/28/2007	Duwamish	Diagonal SD
Fabriform Plastics Inc.	3300 Airport Wy S	Initial	9/6/2007	Duwamish	Diagonal SD
Fabriform Plastics Inc.	3300 Airport Wy S	Followup	11/21/2007	Duwamish	Diagonal SD
Firestone	2915 Rainier Ave S	Initial	11/7/2007	Duwamish	Diagonal SD
Fleetwash Environmental Service	22727 72nd Ave S, #D-107	Initial	10/2/2007	Duwamish	Diagonal SD
Fleetwash Environmental Service	22727 72nd Ave S, #D-107	Followup	12/11/2007	Duwamish	Diagonal SD
Global Transportation	4090 E Marginal Wy	Initial	7/26/2007	Duwamish	Diagonal SD
Goldie's Inc.	3924 Airport Wy S	Initial	8/28/2007	Duwamish	Diagonal SD
High-Rise Cabinets Inc.	2755 Airport Wy S	Initial	10/8/2007	Duwamish	Diagonal SD
I & B Woods, Inc.	5003 Colorado Ave S	Initial	7/23/2007	Duwamish	Diagonal SD
Ikan Two Auto & Truck Wrecking	9802 Martin Luther King Jr Wy S	Initial	11/14/2007	Duwamish	Diagonal SD
Inca Marble & Granite	5212 6th Ave S	Initial	9/4/2007	Duwamish	Diagonal SD
Inca Marble & Granite	5212 6th Ave S	Followup	11/14/2007	Duwamish	Diagonal SD
J.R. Abbott Construction	3512 Airport Wy S	Initial	10/12/2007	Duwamish	Diagonal SD
J.R. Abbott Construction	3512 Airport Wy S	Followup	11/20/2007	Duwamish	Diagonal SD
Jefferson Park Golf Course Clubhouse	4101 Beacon Ave S	Initial	9/4/2007	Duwamish	Diagonal SD
Jefferson Park Golf Maintenance Building	4101 Beacon Ave S	Initial	5/31/2007	Duwamish	Diagonal SD
King County Sheriff	4623 7th Ave S	Initial	12/19/2007	Duwamish	Diagonal SD
Liberty Sidecars	2310 Rainier Ave S	Initial	10/10/2007	Duwamish	Diagonal SD
Liquor Control Board	4401 E Marginal Wy S	Initial	6/12/2007	Duwamish	Diagonal SD
Liquor Control Board	4401 E Marginal Wy S	Followup	8/9/2007	Duwamish	Diagonal SD
Liquor Control Board	4401 E Marginal Wy S	Followup	9/4/2007	Duwamish	Diagonal SD
M&R Equipment, Inc.	3626 Airport Wy S	Initial	11/19/2007	Duwamish	Diagonal SD
MacMillan Piper Inc.	655 S Edmunds St	Initial	10/25/2007	Duwamish	Diagonal SD
Mail Movers	4500 4th Ave S	Initial	9/6/2007	Duwamish	Diagonal SD
Mail Movers	4500 4th Ave S	Followup	11/16/2007	Duwamish	Diagonal SD
McKinstry Company	5005 3rd Ave S	Initial	7/6/2007	Duwamish	Diagonal SD
McKinstry Company	5005 3rd Ave S	Followup	10/1/2007	Duwamish	Diagonal SD
McKinstry Company	5005 3rd Ave S	Followup	12/7/2007	Duwamish	Diagonal SD
McKinstry Company	4800 Denver Ave S	Initial	7/6/2007	Duwamish	Diagonal SD
McKinstry Company	4800 Denver Ave S	Followup	10/1/2007	Duwamish	Diagonal SD
MDE Engineers, Inc.	700 S Industrial Wy	Initial	12/19/2007	Duwamish	Diagonal SD
Merlino Foods	5200 Denver Ave S	Initial	6/15/2007	Duwamish	Diagonal SD
Messenger, Inc.	37 S Hudson St	Initial	7/23/2007	Duwamish	Diagonal SD

Appendix B: SPU/King County Business Inspections (2007)

Facility	Address	Inspection Type	Date Inspected	Basin	Subbasin
Messenger, Inc.	37 S Hudson St	Followup	10/2/2007	Duwamish	Diagonal SD
Nikkei Concerns	1601 E Yesler Wy	Initial	9/26/2007	Duwamish	Diagonal SD
Nikkei Concerns	1601 E Yesler Wy	Followup	11/7/2007	Duwamish	Diagonal SD
NW Container Services Inc.	635 S Edmunds St	Initial	10/23/2007	Duwamish	Diagonal SD
Oberto Sausage Company	2000 Airport Wy S	Initial	10/11/2007	Duwamish	Diagonal SD
Oberto Sausage Company	2000 Airport Wy S	Followup	12/11/2007	Duwamish	Diagonal SD
Olympic Foundry	5200 Airport Wy S	Followup	1/2/2007	Duwamish	Diagonal SD
Olympic Foundry	5200 Airport Wy S	Followup	1/3/2007	Duwamish	Diagonal SD
Pacific Publishing Co.	636 S Alaska St	Initial	11/6/2007	Duwamish	Diagonal SD
PacMed Clinics	1200 12th Ave S	Initial	10/10/2007	Duwamish	Diagonal SD
Pepsi Bottling Group	5300 Denver Ave S	Initial	6/20/2007	Duwamish	Diagonal SD
Phelps Tire	3922 7th Ave S	Followup	1/25/2007	Duwamish	Diagonal SD
Phelps Tire	2520 Airport Wy S	Followup	1/25/2007	Duwamish	Diagonal SD
Plantscapes Horticultural Services	1127 Poplar Pl S	Initial	6/20/2007	Duwamish	Diagonal SD
Plantscapes Horticultural Services	1127 Poplar Pl S	Followup	8/9/2007	Duwamish	Diagonal SD
Puget Sound Industry Services	4429 Airport Wy S	Initial	12/18/2007	Duwamish	Diagonal SD
Rainier Grocery Outlet	2901 27th Ave S, #C	Initial	10/30/2007	Duwamish	Diagonal SD
Ralph's Concrete Pumping	816 Poplar Pl S	Followup	12/17/2007	Duwamish	Diagonal SD
Sears Service Center	4786 1st Ave S	Initial	7/5/2007	Duwamish	Diagonal SD
Sears Service Center	4790 1st Ave S	Initial	7/5/2007	Duwamish	Diagonal SD
Seattle Barrel Company	4716 Airport Wy S	Followup	1/22/2007	Duwamish	Diagonal SD
Seattle Barrel Company	4716 Airport Wy S	Followup	3/22/2007	Duwamish	Diagonal SD
Seattle Goodwill	1400 S Lane St	Initial	11/28/2007	Duwamish	Diagonal SD
Seattle Lighthouse-The Lighthouse for the Blind, Inc.	2501 S Plum St	Initial	9/26/2007	Duwamish	Diagonal SD
Seattle Lighthouse-The Lighthouse for the Blind, Inc.	2501 S Plum St	Followup	11/21/2007	Duwamish	Diagonal SD
Sharp's Automotive, Inc.	2102 Airport Wy S	Initial	10/10/2007	Duwamish	Diagonal SD
Skyline Electric & MFG. Company	3619 7th Ave S	Initial	11/20/2007	Duwamish	Diagonal SD
SME Electrical Contractors	828 S Poplar Pl	Initial	8/21/2007	Duwamish	Diagonal SD
SME Electrical Contractors	828 S Poplar Pl	Followup	9/26/2007	Duwamish	Diagonal SD
Stan's Hamburgers	828 Rainier Ave S	Initial	7/12/2007	Duwamish	Diagonal SD
Stan's Hamburgers	828 Rainier Ave S	Followup	8/28/2007	Duwamish	Diagonal SD
Stewart Lumber Co.	1761 Rainier Ave S	Initial	6/19/2007	Duwamish	Diagonal SD
Sun Food Trading Co.	4715 6th Ave S	Initial	10/17/2007	Duwamish	Diagonal SD
Sun Food Trading Co.	4715 6th Ave S	Followup	12/12/2007	Duwamish	Diagonal SD
TCP Painting	1900 Airport Wy S	Screening	10/1/2007	Duwamish	Diagonal SD
Ted's Auto Repair	1622 E Yesler Wy	Initial	8/9/2007	Duwamish	Diagonal SD
Ted's Auto Repair	1622 E Yesler Wy	Followup	12/7/2007	Duwamish	Diagonal SD
Union Pacific Railroad	402 S Dawson St	Initial	6/27/2007	Duwamish	Diagonal SD
Union Pacific Railroad	4700 Denver Ave S	Initial	6/27/2007	Duwamish	Diagonal SD
Union Pacific Railroad	5000 Denver Ave S	Initial	6/27/2007	Duwamish	Diagonal SD
Union Pacific Railroad	4700 Denver Ave S	Followup	9/6/2007	Duwamish	Diagonal SD

Appendix B: SPU/King County Business Inspections (2007)

Facility	Address	Inspection Type	Date Inspected	Basin	Subbasin
Union Pacific Railroad	402 S Dawson St	Followup	9/6/2007	Duwamish	Diagonal SD
Union Pacific Railroad	5000 Denver Ave S	Followup	9/6/2007	Duwamish	Diagonal SD
Union Pacific Railroad	4700 Denver Ave S	Followup	9/25/2007	Duwamish	Diagonal SD
Union Pacific Railroad	5000 Denver Ave S	Initial	11/14/2007	Duwamish	Diagonal SD
Utility Inc.	3931 1st Ave S	Initial	8/22/2007	Duwamish	Diagonal SD
Utility Inc.	4029 1st Ave S	Initial	8/22/2007	Duwamish	Diagonal SD
W.W. Grainger, Inc.	4930 3rd Ave	Initial	7/26/2007	Duwamish	Diagonal SD
Washington State DOT - Gas Station	3700 9th Ave S	Initial	8/23/2007	Duwamish	Diagonal SD
Washington State DOT - Gas Station	3700 9th Ave S	Followup	9/26/2007	Duwamish	Diagonal SD
Washington State DOT - Signal Shop	3700 9th Ave S	Initial	8/23/2007	Duwamish	Diagonal SD
Washington State DOT - Signal Shop	3700 9th Ave S	Followup	9/26/2007	Duwamish	Diagonal SD
Watermark Press	1407 S Dearborn St	Initial	9/6/2007	Duwamish	Diagonal SD
Watermark Press	1407 S Dearborn St	Followup	9/13/2007	Duwamish	Diagonal SD
Whole Foods Market	4250 E Marginal Wy S	Initial	7/26/2007	Duwamish	Diagonal SD
Pile Contractors, Inc.	150 S River St	Initial	3/7/2007	Duwamish	Duwamish (NEC) SD
Pile Contractors, Inc.	150 S River St	Followup	4/13/2007	Duwamish	Duwamish (NEC) SD
Precision Welder & Engine Repair	4429 Airport Wy S	Initial	12/18/2007	Duwamish	Duwamish (NEC) SD
Puget Sound Coatings	9220 8TH Ave S	Initial	1/17/2007	Duwamish	Duwamish (NEC) SD
Puget Sound Coatings	9220 8TH Ave S	Followup	5/4/2007	Duwamish	Duwamish (NEC) SD
Puget Sound Truck Lines	7303 8th Ave S	Initial	11/29/2007	Duwamish	Duwamish (NEC) SD
V.Van Dyke, Inc.	150 S River St	Followup	2/16/2007	Duwamish	Duwamish (NEC) SD
V.Van Dyke, Inc.	150 S River St	Followup	3/7/2007	Duwamish	Duwamish (NEC) SD
V.Van Dyke, Inc.	150 S River St	Followup	4/13/2007	Duwamish	Duwamish (NEC) SD
Sea Pac Transport Services LLC	3544 W Marginal Wy SW	Followup	5/3/2007	Duwamish	Glacier Bay
Harrington Industrial Plastics LLC	4322 S 104th Pl	Initial	11/28/2007	Duwamish	Norfolk SD
Nelson Trucking	9747 M L King Jr WY S	Initial	10/11/2007	Duwamish	Norfolk SD
NW Autowrecking	10230 E Marginal Wy S	Initial	5/23/2007	Duwamish	Norfolk SD
NW Autowrecking	10230 E Marginal Wy S	Followup	7/23/2007	Duwamish	Norfolk SD
Pacific Grip & Lighting	10401 Martin Luther King Jr Wy S	Initial	12/12/2007	Duwamish	Norfolk SD
Reliable Auto Parts	4345 S 104th Pl	Initial	12/10/2007	Duwamish	Norfolk SD
Shultz Distributing Inc.	1495 S Hardy St	Initial	5/22/2007	Duwamish	Slip 4
Shultz Distributing Inc.	1495 S Hardy St	Followup	7/23/2007	Duwamish	Slip 4
Da Vinci Gourmet	7224 1st Ave S	Initial	10/13/2007	Duwamish	South Park
Fire King of Seattle, Inc.	240 S Holden St	Initial	11/20/2007	Duwamish	South Park
Lion Trucking, Inc.	8425 1st Ave S	Initial	1/18/2007	Duwamish	South Park
Lion Trucking, Inc.	8425 1st Ave S	Followup	4/11/2007	Duwamish	South Park
National Products Inc.	1017 S Elmgrove St	Initial	12/5/2007	Duwamish	South Park
Seattle Forging & Tool Inc.	218 S Holden St	Initial	11/19/2007	Duwamish	South Park
Basin Oil	8661 Dallas Ave S	Screening	3/14/2007	Duwamish	T117
American Environmental Construction LLC	7417 4th Ave S	Initial	11/16/2007	Duwamish	Trotsky
Bill's Mobile Service	7265 2nd Ave S	Initial	10/3/2007	Duwamish	Trotsky

Appendix B: SPU/King County Business Inspections (2007)

Facility	Address	Inspection Type	Date Inspected	Basin	Subbasin
Bill's Mobile Service	7265 2nd Ave S	Followup	11/21/2007	Duwamish	Trotsky
Boyer Logistics	7318 4th Ave S	Initial	5/3/2007	Duwamish	Trotsky
Boyer Logistics	7318 4th Ave S	Followup	7/5/2007	Duwamish	Trotsky
Cunningham Manufacturing	318 S Webster St	Initial	4/24/2007	Duwamish	Trotsky
Cunningham Manufacturing	318 S Webster St	Followup	5/22/2007	Duwamish	Trotsky
Elliot Bay Industries	7500 West Marginal Wy S	Initial	11/20/2007	Duwamish	Trotsky
Ferguson Construction Inc.	7433 5th Ave S	Initial	5/29/2007	Duwamish	Trotsky
Ferguson Construction Inc.	7433 5th Ave S	Followup	7/10/2007	Duwamish	Trotsky
Fox Plumbing & Heating	7501 2nd Ave S	Initial	5/29/2007	Duwamish	Trotsky
Fox Plumbing & Heating	7501 2nd Ave S	Followup	7/10/2007	Duwamish	Trotsky
Global Inc	7619 2nd Ave S	Initial	11/21/2007	Duwamish	Trotsky
Mercer Products	401 S Webster St	Screening	12/11/2007	Duwamish	Trotsky
North Industries	401 S Webster St	Initial	11/15/2007	Duwamish	Trotsky
North Pacific Seafoods	7417 4th Ave S	Initial	11/29/2007	Duwamish	Trotsky
Northwest Center	7272 W Marginal Wy S	Initial	11/5/2007	Duwamish	Trotsky
NW Building Tech	215 S Austin St	Initial	3/29/2007	Duwamish	Trotsky
NW Building Tech	215 S Austin St	Followup	4/9/2007	Duwamish	Trotsky
Oppenheimer Cine Rental LLC	7400 3rd Ave S	Initial	10/16/2007	Duwamish	Trotsky
Oppenheimer Cine Rental LLC	7400 3rd Ave S	Followup	11/20/2007	Duwamish	Trotsky
PACO, Yard 1	7400 2nd Ave S	Initial	3/29/2007	Duwamish	Trotsky
PACO, Yard 1	7400 2nd Ave S	Followup	5/25/2007	Duwamish	Trotsky
PACO, Yard 2	7560 2nd Ave S	Initial	3/29/2007	Duwamish	Trotsky
PACO, Yard 2	7560 2nd Ave S	Followup	5/25/2007	Duwamish	Trotsky
PACO, Yard 3	7601 2nd Ave S	Initial	3/29/2007	Duwamish	Trotsky
PACO, Yard 3	7601 2nd Ave S	Followup	5/25/2007	Duwamish	Trotsky
Pioneer Human Services	7440 W Marginal Wy S	Initial	11/5/2007	Duwamish	Trotsky
Pro Sweep	401 S Webster St	Initial	12/11/2007	Duwamish	Trotsky
Tucker-Wetzel & Associates Inc.	230 S Austin St	Screening	11/19/2007	Duwamish	Trotsky
Twilley Industrial Tool Supply Co.	222 S Austin St	Screening	4/25/2007	Duwamish	Trotsky
United Iron Works	7421 5th Ave S	Initial	12/6/2007	Duwamish	Trotsky
W. G. Wright & Associates, Inc.	301 S Webster St	Initial	10/16/2007	Duwamish	Trotsky
W. G. Wright & Associates, Inc.	301 S Webster St	Followup	11/19/2007	Duwamish	Trotsky
WHECO	315 Fontanelle St S	Initial	11/14/2007	Duwamish	Trotsky
WHECO	315 Fontanelle St S	Followup	11/20/2007	Duwamish	Trotsky

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Appendix C
Ecology Inspections of NPDES–
Permitted Facilities

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Appendix C: NPDES-Permitted Facilities and Most Recent Ecology Inspection Dates

NPDES Permit ID	Facility	Address	City	Type of Permit	Date Inspected
SO3004602	Abx Air, Inc - Seattle	8075 PERIMETER ROAD S	Seattle	General Stormwater Industrial	May 24, 2006
SO3000154	Ace Galvanizing Inc 96th	429 S 96TH ST	Seattle	General Stormwater Industrial	August 10, 2006
SO3000843	Affordable Auto Wrecking	9802 MARTIN LUTHER KING JR WAY S	Seattle	General Stormwater Industrial	August 18, 2006
SO3001219	Airco Gases Div Of Boc Seattle	7700 14TH AVE S	Seattle	General Stormwater Industrial	December 1, 2006
SO3001365	Alaska Marine Lines Seattle Termina	5502 + 5658 W MARGINAL WAY	Seattle	General Stormwater Industrial	January 30, 2006
SO3004605	Alaska Street Reload & Recycling	70 SOUTH ALASKA STREET	Seattle	General Stormwater Industrial	February 6, 2007
SO3000139	Alaskan Copper Works	3200 6TH AVE S	Seattle	General Stormwater Industrial	April 13, 2007
SO3002830	Ameriflight Inc Hangar 5	7585 PERIMETER RD S	Seattle	General Stormwater Industrial	October 25, 2006
SO3003235	Amtrak Railroad King St Maintenance	187 HOLGATE STREET S	Seattle	General Stormwater Industrial	December 14, 2006
SO3000089	Asahipen America Inc	1128 SW SPOKANE ST	Seattle	General Stormwater Industrial	January 24, 2007
SO3002040	Associated Grocers 3301 Norfolk	3301 S NORFOLK ST	Seattle	General Stormwater Industrial	January 29, 2007
SO3000392	Becker Truck Terminal	12677 E MARGINAL WAY S	Seattle	General Stormwater Industrial	October 31, 2005
SO3002612	Becker Trucking, Inc	6350 S 143RD ST	Seattle	General Stormwater Industrial	April 16, 2007
SO3000146	Boeing Developmental Center	9725 E MARGINAL WAY S	Tukwila	General Stormwater Industrial	March 17, 2006
SO3000150	Boeing Military Flight Center	10002 E MARGINAL WAY S	Seattle	General Stormwater Industrial	March 17, 2006
SO3000482	Boeing Plant 2	7755 E MARGINAL WAY S	Seattle	General Stormwater Industrial	April 20, 2007
SO3001009	Boeing South Park Facility	1420 S TRENTON STSOUTH PARK PLANT	Kent	General Stormwater Industrial	April 6, 2007
SO3000148	Boeing Thompson Site	8770 EAST MARGINAL WAY S	Tukwila	General Stormwater Industrial	April 6, 2007
SO3005598	Boyer Logistics Inc	7318 FOURTH AVENUE SOUTH	Seattle	General Stormwater Industrial	February 28, 2007
SO3005603	Bp Seattle Terminal	1652 SW LANDER ST	Seattle	General Stormwater Industrial	November 29, 2006
SO3002153	Building Busters Inc	13001 MARTIN LUTHER KING JR WAY	Seattle	General Stormwater Industrial	December 14, 2006
WAG503337B	Cadman Seattle	5225 E MARGINAL WAY S	Seattle	Sand and Gravel	NA
SO3002274	CB Finishing	9585 8TH AVE S	Seattle	General Stormwater Industrial	May 30, 2007
SO3002641	Cedar Grove Compost Webster Yard	7343 E MARGINAL WAY S	Seattle	General Stormwater Industrial	April 12, 2007
SO3002285	Chas A Lasater Co Seattle	515 S 96TH ST	Seattle	General Stormwater Industrial	October 26, 2006
SO3000033	Chemithon Corp	5430 W. MARGINAL WAY S.W.	Seattle	General Stormwater Industrial	November 27, 2007
SO3005619	Colorado St Facility Rainier Petro	40 S SPOKANE ST	Seattle	General Stormwater Industrial	May 4, 2005
WA0001945E	ConocoPhillips Co Renton Terminal	2423 LIND AVE SW	Renton	Individual Industrial	March 26, 2007
SO3000040	Custom Gear Inc	10834 E. MARGINAL WAY S.	Seattle	General Stormwater Industrial	November 2, 2005
SO3000500	Darigold Rainier Ave Plant	4058 RAINIER AVE. S.	Seattle	General Stormwater Industrial	February 6, 2007
WAG030091C	Delta Marine Industries Inc	1608 S 96TH ST	Seattle	Boatyard	January 25, 2007
SO3005621	Dr Concrete Recycle	149 SW KENYON	Seattle	General Stormwater Industrial	May 2, 2007
WA0030937C	Duwamish Shipyard	5658 W MARGINAL WAY SW	Seattle	Individual Industrial	June 25, 2007
SO3000464	Eagle Marine Services Ltd Term 5	3200 W MARGINAL WAY SW	Seattle	General Stormwater Industrial	June 25, 2007
SO3002198	Engstrom Machine Works Inc	6400 S 143RD PL	Tukwila	General Stormwater Industrial	May 10, 2007
SO3002966	Evergreen Trails Inc	4500 W MARGINAL WAY SW	Seattle	General Stormwater Industrial	February 7, 2006
SO3000863	Farwest Paint Mfg Co	4522 S. 133RD ST.	Tukwila	General Stormwater Industrial	August 7, 2006
SO3003598	Fibres International Inc 4th Av	9208 4TH AVE S	Seattle	General Stormwater Industrial	February 13, 2007
SO3002329	First Student Inc Steilacoom	130 S KENYON ST	Seattle	General Stormwater Industrial	April 26, 2007
SO3001953	Fmh Material Handling Solutions	1313 S 96TH ST	Seattle	General Stormwater Industrial	October 25, 2006
SO3000475	Fog Tite Inc.	4819 W. MARGINAL WAY S.W.	Seattle	General Stormwater Industrial	November 1, 2005
SO3002292	Franz Seattle	2901 6TH AVE S	Seattle	General Stormwater Industrial	May 11, 2005
SO3000607	Galvin Flying Service Inc	7149 PERIMETER RD S	Seattle	General Stormwater Industrial	May 25, 2006

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NPDES Permit ID	Facility	Address	City	Type of Permit	Date Inspected
SO3002341	General Recycling Of Washington Llc	TERMINAL 105 4260 W MARGINAL WAY SW	Seattle	General Stormwater Industrial	January 30, 2007
SO3002227	Glacier Northwest Inc	3838 W MARGINAL WAY SW	Seattle	General Stormwater Industrial	June 7, 2006
WAG503191C	Glacier Northwest Inc	5975 E MARGINAL WAY S	Seattle	Sand and Gravel	November 16, 2006
SO3000801	Grundfos Cbs Inc.	3215 S 116TH ST	Seattle	General Stormwater Industrial	May 2, 2007
SO3000054	Harbor Island Machine Works Inc	3431 11TH AVE SW	Seattle	General Stormwater Industrial	April 22, 2005
WAG503282C	Icon Materials Seattle Asphalt	1115 S 96TH ST	Seattle	Sand and Gravel	November 6, 2007
SO3009725	Independent Metals - Plant 2	816 South Kenyon Street	Seattle	General Stormwater Industrial	February 6, 2008
SO3001949	Industrial Automation Inc	1421 S 93RD ST	Seattle	General Stormwater Industrial	February 12, 2008
SO3008681	Insurance Auto Auctions Tukwila	8801 E MARGINAL WAY S	Seattle	General Stormwater Industrial	February 28, 2007
SO3004509	Island Tug And Barge Terminal 7c	3546 W MARGINAL WAY SW	Seattle	General Stormwater Industrial	January 30, 2007
WAG503082C	JA Jack & Sons Inc	5407 OHIO AVE S	Seattle	Sand and Gravel	November 6, 2007
SO3000056	James Hardie Gypsum	5931 E MARGINAL WAY S	Seattle	General Stormwater Industrial	April 25, 2006
SO3003231	Jorgensen Forge Corp	8531 E MARGINAL WAY S	Seattle	General Stormwater Industrial	January 13, 2006
SO3005569	King Co Transit South Base Annex	11911 E MARGINAL WAY S	Tukwila	General Stormwater Industrial	April 23, 2007
SO3000343	King County Int Airport Maint Shop	6518 ELLIS AVE. S.	Seattle	General Stormwater Industrial	November 30, 2006
WA0002232E	LaFarge North America Inc.	5400 W MARGINAL WAY SW	Seattle	Individual Industrial	February 5, 2008
SO3004614	Lee & Eastes Tank Lines Inc	2418 AIRPORT WAY SOUTH	Seattle	General Stormwater Industrial	June 2, 2006
SO3000206	Longview Fibre Seattle	5901 E MARGINAL WAY S	Seattle	General Stormwater Industrial	December 22, 2005
SO3003252	Macmillan Piper Mass Shop	637 S MASSACHUSETTS	Seattle	General Stormwater Industrial	November 29, 2006
SO3000639	Meltec Division Of Young Corp	3444 13TH AVE SW	Seattle	General Stormwater Industrial	February 28, 2007
SO3000417	Metro South Operating Base	12100 E MARGINAL WAY S	Seattle	General Stormwater Industrial	October 31, 2005
SO3000868	Millwork Supply Co	2225 1ST AVE S	Seattle	General Stormwater Industrial	April 18, 2007
SO3000226	North Boeing Field	7700 E MARGINAL WAY S	Seattle	General Stormwater Industrial	December 16, 2005
SO3000471	Northland Services Inc. Seattle	6700 W. MARGINAL WAY S.W.	Seattle	General Stormwater Industrial	May 22, 2006
SO3000961	Northwest Auto + Truck Wrecking Inc	10230 E MARGINAL WAY S	Tukwila	General Stormwater Industrial	May 22, 2007
SO3003779	Northwest Container Services Inc	6110 W MARGINAL WAY SW TERM 115	Seattle	General Stormwater Industrial	February 23, 2007
SO3001918	Northwest Grating Products	9230 4TH AVE S	Seattle	General Stormwater Industrial	April 26, 2007
SO3000804	Oberto Sausage Co Airport Way Plant	2005 AIRPORT WAY S	Seattle	General Stormwater Industrial	March 22, 2007
SO3002835	Overnite Transportation Co 9/3/96	11231 E MARGINAL WAY S	Tukwila	General Stormwater Industrial	April 23, 2007
SO3000484	Pac Rail	44 S HANFORD ST	Seattle	General Stormwater Industrial	June 20, 2007
SO3005562	Pacific Rail Serv+Bnsf So Seattle	12400 - 51ST PLACE SO	Seattle	General Stormwater Industrial	May 25, 2007
SO3001901	Pacific Utility Equipment Co (Terex Utilities)	9428 8th Avenue S	Seattle	General Stormwater Industrial	June 20, 2007
SO3001817	Pendleton Mills LLC	3235 16TH AVE SW	Seattle	General Stormwater Industrial	March 2, 2005
SO3008720	Pepsi Bottling Group Seattle Plant	2300 26TH AVE S	Seattle	General Stormwater Industrial	April 17, 2007
SO3001897	Pioneer Industries	7000 HIGHLAND PKWY SW	Seattle	General Stormwater Industrial	March 22, 2007
SO3002517	Port of Seattle Marine Maint Shop	25 S HORTON ST	Seattle	General Stormwater Industrial	April 22, 2005
SO3000264	Psf Mechanical Inc	9322 14TH AVE. S.	Seattle	General Stormwater Industrial	July 31, 2006
SO3002142	Puget Sound Coatings	9220 8TH AVE S	Seattle	General Stormwater Industrial	February 13, 2008
SO3000949	Puget Sound Truck Lines Inc Sea	7303 8TH AVE. S.	Seattle	General Stormwater Industrial	June 9, 2005
SO3002721	Rainier Petroleum P 15	1711 13TH AVE SW	Seattle	General Stormwater Industrial	April 17, 2007
SO3000015	Recycling Depot Inc	851 RAINIER AVE S	Seattle	General Stormwater Industrial	April 26, 2007
SO3002149	Regional Disposal Black River Trans	501 MONSTER RD SW	Renton	General Stormwater Industrial	December 2, 2005
SO3004620	Roadway Express Inc (T870)	600 S 96TH ST	Seattle	General Stormwater Industrial	April 26, 2007

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NPDES Permit ID	Facility	Address	City	Type of Permit	Date Inspected
SO3001134	Saint Gobain Containers Llc	5801 E MARGINAL WAY S	Seattle	General Stormwater Industrial	December 28, 2005
SO3005565	Scs Refrigerated Services - Seattle	303 SOUTH RIVER	Seattle	General Stormwater Industrial	May 30, 2007
NA	Seafreeze LTD Parnership	206 SW Michigan St	Seattle	No Permit	January 15, 2008
SO3000962	Seatac Marine Services Llc	6701 FOX AVE S	Seattle	General Stormwater Industrial	June 27, 2007
NA	Seattle Biodiesel	6333 1st Ave S	Seattle	No Permit	November 14, 2007
SO3002208	Seattle Boilerworks Inc Myrtle St	500 S MYRTLE ST	Seattle	General Stormwater Industrial	June 26, 2007
SO3003645	Seattle Iron + Metals Corp	600 SOUTH GARDEN ST	Seattle	General Stormwater Industrial	March 29, 2006
NA	Seattle Lighthouse for the Blind	2501 S. Plum St.	Seattle	No Permit	September 26, 2007
SO3001958	Seattle Refrigeration + Mfg Aka Avj	1057 S DIRECTOR ST	Seattle	General Stormwater Industrial	December 13, 2007
SO3000650	Selland Auto Transport	615 S 96TH ST	Seattle	General Stormwater Industrial	April 23, 2007
WA0001791D	Shell Oil Product Seattle Terminal	2555 13TH AVE SW	Seattle	Individual Industrial	NA
SO3002346	Shultz Distributing Inc Sea	6851 E MARGINAL WAY S	Seattle	General Stormwater Industrial	January 27, 2006
SO3000930	Skyline Electric and Mfg Co Inc.	3619 7TH AVE S	Seattle	General Stormwater Industrial	April 23, 2007
NA	Smoki Foods	206 SW Michigan St	Seattle	No Permit	January 15, 2008
WAG030045C	South Park Marina	8604 DALLAS AVE S	Seattle	Boatyard	June 7, 2005
SO3000737	South Recycle And Disposal Station	8100 2ND AVE. S.	Seattle	General Stormwater Industrial	June 10, 2005
SO3000617	Standard Steel Fabricating Co Inc	8155 1ST AVE S	Seattle	General Stormwater Industrial	April 26, 2007
SO3000467	Stevedoring Services Terminal 18	2400 11TH AVE. S.W.	Seattle	General Stormwater Industrial	July 12, 2005
SO3002471	Swan Bay Holdings Dock	7100 2ND AVE SW	Seattle	General Stormwater Industrial	May 11, 2006
SO3000430	System Transfer and Storage Co.	2400 6TH AVE S	Seattle	General Stormwater Industrial	May 10, 2007
SO3000763	The Gear Works Seattle Inc	500 S PORTLAND ST	Seattle	General Stormwater Industrial	March 22, 2007
SO3000253	Tierney Elec Mfg Co	7901 7TH AVE S	Seattle	General Stormwater Industrial	March 22, 2007
SO3001155	Union Pacific Railroad Co Dawson St	402 S DAWSON ST	Seattle	General Stormwater Industrial	December 5, 2006
SO3002137	United Iron Works	7421 5TH AVE S	Seattle	General Stormwater Industrial	December 6, 2007
SO3000434	United Parcel Service Waboe	7575 PERIMETER RD S	Seattle	General Stormwater Industrial	February 26, 2008
SO3000443	United Parcel Service Wasau	4329 7TH AVE S	Seattle	General Stormwater Industrial	August 3, 2005
SO3000444	United Parcel Service Wasea	4455 7TH AVE S	Seattle	General Stormwater Industrial	February 26, 2008
SO3000453	V Van Dyke Inc	150 S. RIVER ST.	Seattle	General Stormwater Industrial	December 1, 2006
SO3000581	Waste Management Of Seattle Marg Wy	7201 W MARGINAL WAY SW	Seattle	General Stormwater Industrial	December 2, 2005
SO3000582	Waste Management Sea Recycle Am	7901 1ST AVE S	Seattle	General Stormwater Industrial	January 23, 2008
SO3002111	West Coast Wire + Rope Rigging Inc	7777 7TH AVE S	Seattle	General Stormwater Industrial	May 31, 2007
SO3004526	Westway Feed Products Co Inc	1002 SW SPOKANE STREET	Seattle	General Stormwater Industrial	April 20, 2005

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